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PROCEEDINGS
OF THE
ENTOMOLOGICAL SOCIETY
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PROCEEDINGS
OF THE
ENTOMOLOGICAL SOCIETY
OF PHILADELPHIA.

2. Revision of the hitherto known species of the genus *CHIONOBAS* in North America.

BY SAMUEL H. SCUDDER.

(Communicated June 12th, 1865.)

Having long been desirous of comparing the species of *Chionobas* described by Say under the name of *Hipparchia semidea*, of which I have seen a large number of specimens, with the subarctic species of the same genus indicated or described by authors as living in the colder regions of this continent, no specimens of which have hitherto found their way into the museums of this country, it was with great satisfaction that I was given the opportunity of examining an interesting collection of this genus made by my friend and fellow student Dr. A. S. Packard, Jr., on the coast of Labrador, near the northern extremity of the Straits of Belle Isle, and as far north as the mission station of Hopedale; it comprised all but one of the species hitherto described or figured, or in any way indicated as coming from that region—that exception was made good to me through the favor of Mr. W. H. Edwards, to whom I have been so frequently indebted for the gift and loan of specimens desired by me in my studies, and for many useful notes upon them; from him also I have received specimens from Labrador ticketed by Möschler, the latest reviser of the European species, which have been of great service to me, and also a specimen of the only species yet described or figured from the western portion of our continent. Without doubt other species will be added so soon as that region is explored, which will not be long hence, we may be sure. Already another species is indicated from that region, obtained by Mr. Lorquin. In the meantime it has seemed to me a useful undertaking to attempt to scrutinize the relations of the species already known on this continent, and to understand what this and that author have meant by *Oeno*, *Also*,

Taygete, *Bootes*, &c., thereby accomplishing for North America what Möschler has done for Europe; and although I have not been able to agree with that author in all his determinations, I hope I shall not be found to have created confusion thereby. I have not attempted to give any opinion upon purely European species, since, from the want of a sufficient number of specimens from that continent, such an undertaking would be misplaced, but where the Labrador species was one said to be identical with the European, I have founded my judgment wholly on the Labrador specimens and figures of Labrador individuals, and have given, from all works at my command, synonymical lists, it will be seen, only of descriptions and figures of, or references to, specimens from Labrador, strictly confining myself to the American species. I do not doubt, however, that some of them are found upon both sides of the Atlantic, and have specimens of several under examination from Europe and America which do not seem to me distinct. For these also I am indebted to the favor of Mr. Edwards. But this field of inquiry being extraneous to my purpose, I have not entered upon it. I have given outline figures to illustrate the direction of both the borders of the middle band on the under surface of the secondaries, using, when sketching them, a specimen of each species which seemed to me to exhibit the normal condition.

A description of the egg, larva and chrysalis of one species, (*Ch. semidea*) with figures of the latter two, will be found in my "Remarks on some characteristics of the insect-fauna of the White Mountains, New Hampshire," published in the Boston Journal of Natural History, Vol. VII, pp. 612—631.

One source of confusion and difficulty of understanding the meaning of authors has been, it seems to me, in the indifferent manner with which they have frequently used specific names which in their view were synonymous, leading others to believe that because, for instance, they employed in one place the specific name *Bootes* and in another *Taygete*, therefore they believed that two species existed, when it was only an irregular use of names which had been applied by different authors to one and the same species. Another thing is still more remarkable to me, however: Möschler, in his valuable article on the Lepidopteran Fauna of Labrador, (Wiener Ent. Monatschr. IV) enumerates on p. 342 the species of *Chionobas* found there as *Jutta* Hüb., *Taygete* Hüb., *Oeno* Bd. and *Bootes* Bd., remarking, in connection therewith, that he discusses their relation so fully in his paper on the genus *Chionobas* in Europe, that it is only necessary to give an enumeration of them; and in addition thereto, criticizing Mr. Christophs'

view, he says in a note on p. 332, that *Bootes*, *Taygete* and *Oeno* exhibit very good differences, as he will show in that same paper. Now when this paper is published, two and a half years afterward, he places *Bootes* Bd. as a synonym of *Taygete* Hübner without expressing any change of view, or referring in any way to his previous statement and enumeration as erroneous, which he certainly should have done after so direct a reference to the latter paper for explanations and proof of the accuracy of views already expressed; no such reference being made, it is a little surprising to find that instead of being confirmed they are controverted.

1. *Chionobas Jutta*.

Chionobas Jutta, Möschler, Wiener entom. Monatschrift, IV. 342; VII. 201.

Chionobas Balder Boisduval, Icones hist. des Lepidopt. I. 189, Pl. 39, figs. 1—3.

" Hist. gener. et Icones Lepidopt. de l'Am. Sept. 216.

Doubleday, Westwood and Hewitson, Gen. Diurnal Lepidopt. II. 382.

Herrich-Schäffer, Syst. Bearb. d'Schmett. von Europa, II. Tagfalter, 68.

Morris, Synop. Lepidopt. N. Am. 71.

Schiödt, in Rink, Naturhist. Bidrag til en Beskriv af Grönland, 64.

Eumenis Balderi Hübner, Zuträge, 43, figs. 981—982.

Expanse of wings ♂ 2.06—2.16 in.; ♀ 2.16—2.20 in.

Head, thorax and abdomen black, with brownish hairs. Antennæ of the ground color of upper side of wings, annulated with grayish-white; club reddish-brown, tip sometimes darker. Palpi with short grayish-white hairs throughout, long black ones beneath. Femora dark brown; tibiæ brownish-yellow, flecked with gray; upper side of tarsi sometimes darker.

Wings above dark brown, with dark spots along the border in a yellowish field; beneath mostly marbled with grayish, dark brown and black. Fringe pure white, interrupted narrowly with black at the nervule-tips.

Above. *Primaries* dark brown, the ♂ slightly darker. Parallel to the outer border and nearer to it than to the extremity of the cell is a broad band, dull yellow in the ♀, more or less ochraceous in the ♂, extending from the costal to the internal nervure, generally interrupted only by the nervures in the ♀, broken up into roundish or ovoid spots, often widely separated in the ♂, which have rather large, black, round or ovoid spots in cells 2 and 5 (counting from the internal nervure), and one of the same size or smaller, or even reduced to a point, in cell 3, absent in the ♂, the lowermost of these spots slightly nearer the

border than the others. ♂ with two black spots of hair-like scales, one next the base below the median nervure resting upon and extending to its first branch; the second, separated by this branch from the first, rests upon the median both above and below, divided by it and extending to the termination of the cell, having a small patch between the second and third median nervules. Costal border, especially near base, indistinctly mottled with gray and black. *Secondaries* of the same general color as the primaries, with a similar band before the border, continuous or nearly so in both sexes, in which, in every interspace, is a more or less distinct pale yellow dot, except in that between the first and second median nervules, where there is a small eye-like spot, indistinctly white-pupilled. One of the specimens exhibits also a similar but indistinct spot between the second and third median nervules. The separation of the band from the border is less distinct in the ♀ than in the ♂.

Beneath. *Primaries* slightly paler than the upper surface; the whole costal edge mottled white and black; the apex of the wing and the upper half of the outer border is either uniform gray from the equal commingling of white and dark brown scales, or by the clustering of scales of the same color into spots is pretty uniformly marbled with white and dark brown or black. The outer half of the wing with a yellowish (♀) or slight ochraceous (♂) tinge, with seldom any mark of the light band of the upper side except as a halo, distinct and large in ♀, faint and narrow in ♂, around the spots of the second and fifth cells, which reappear on this surface, the upper always, the lower generally, distinctly white-pupilled. *Secondaries* marbled with narrow transverse, generally wavy bars of clustered grayish-white, and brown or blackish-brown scales, in some individuals one, in others the other predominating, the



lighter colors being fainter or nearly absent on the middle band, and generally most conspicuous next its outer limit; the middle band not very prominently darker than the ground color but broad; its outer border generally only narrowly edged with blackish, is deeply crenated except toward the inner border, where the curves are slight and broad or wanting; it extends from the costal border to exactly the extremity of the cell in three very prominent arches, the first two each occupying an interspace. the third broad and arching over two interspaces; from the extremity of the cell the border bends backwards towards the base, with a prominent arch in the next interspace, but in the remaining, by which it reaches the inner border, only slight curves or none at all; the inner border is much less distinct, but has an angular depression between the costal and subcostal nervures, and a very deep and rounded one in the

lower half of the cell; the costal edge is mottled black and white, the outer edge is narrowly lined with black, before which is generally a narrow faint band where the grayish scales predominate over the black. The remainder of the wing is generally uniformly marbled, but in one specimen (♂) before me the narrow dark line bordering the inner half of the outside of middle band continues on in a straight line to the outer angle of the wing at the termination of the second subcostal nervule. The eye of the upper appears again beneath, very prominently white-pupilled, so much so as sometimes to appear almost altogether as a white spot; the spots in the other interspaces are generally larger, more prominent and paler; nervures not flecked with white.

2 ♂; Hopedale and Square Island Harbor, Labrador, Dr. A. S. Packard, Jr. 2 ♀; Quebec, W. H. Edwards.

It will be seen from this description that my specimens have eyes on the upper side of the secondaries only in cell 2, except in one which has a very indistinct one in cell 3, but that they all are delicately white-pupilled; also that all the eyes of the under side of the secondaries of the male as well as the female are white-pupilled, that of cell 5 distinctly; further, that the eye of cell 2 on the under side of the secondaries in the ♂ is very prominently white-pupilled; these are variations noted from Möschler's description.

I am inclined to accept Möschler's union of *Jutta* with *Balder*, having examined also a pair of specimens of this species from Russia, labelled "*Balder*" by Menetries, kindly loaned me by Mr. Edwards.

2. *Chionobas Chryxus*.

Chionobas chryxus Doubleday, Westwood and Hewitson, Gen. Diurnal Lepidopt. II. 383, Pl. 64, fig. 1.

Edwards, Proc. Entom. Soc. Philad. II. 82.

Expanse of wings, ♀ 2.2 inches.

♀. Head, thorax and abdomen black, with ochraceous hairs, mingled with black ones on front of thorax. Antennæ light brownish-yellow, faintly annulated with white, the tip of club dusky. Palpi very pale yellow, with hairs of same color, of moderate length, as long above as below, with a very few longer black ones mingled with them below, more abundant and occurring both above and below at the tip. Legs grayish; femora, except tip, darker.

Wings above dull ochraceous-yellow, flecked with brown on the basal half and along the costal and outer margin of primaries and the outer angle of secondaries; beneath paler, secondaries marbled with brown and gray, with a dusky middle band.

Above. *Primaries* dull ochraceous-yellow, the base largely flecked

to beyond the cell with dull reddish-brown, in which we see broad and short pale bands on both sides of the nervure, closing the cell, which itself is distinctly but narrowly bordered with dark brown, and similar bands across the cell towards the base; the costal border flecked with brown scales which extend as a band around the outer border to the second median nervule; the costal edge marbled, especially toward base, with black and white, less distinct toward middle of wing. In the broad pale ochraceous-yellow band which is thus formed across the outer half of the wing, which is divided by a spur of the basal brown extending along the last branch of the median nervure, there are three blackish eye-like, slightly ovoid spots in the second, third and fifth cells, the third much smaller than the others, the fifth indistinctly white-pupilled. *Secondaries* faintly marbled with transverse bars, sometimes clustered into spots, of dull ochraceous-yellow and dull reddish-brown, the darker colors predominating over a large basal portion, still darker next the base, and the lighter occupying the outer portion, with the exception of a band across the outer angle of dark brown scales clustering into spots in the interspaces; between the first and second median nervules a small round blackish spot, largely pupilled with grayish-white; the marbling seen is that of the diaphanous marking of the under surface.

Beneath. *Primaries* dirty grayish-white, tinged with faint ochraceous, especially in lower half; a brownish band along outer border corresponding to upper surface but extending further, faintly marbled with grayish, especially at tip of wing; costal edge distinctly marbled with grayish-white and black as far as this band, but interrupted by a darker spot above the eye; a broad band across the middle of the wing, whose outer border corresponds to the outer border of the basal brown of upper surface, that is, runs parallel to the nervure closing the cell, projects outwards as a narrow sharply pointed tooth along the last median nervule and just reaches the outer band, after which it continues in broad shallow waves parallel to the outer border; its inner border below the cell is indistinct, merging into the paler colors basewards; it crosses the cell irregularly above the origin of the second median nervule; the band is partially divided by a broad bar of grayish crossing the cell at its extremity and by a pale spot just beyond the cell; the basal portion of the wing is sprinkled with clusters of brownish spots in the cell which sometimes congregate into narrow bars crossing it; the eyes of the upper surface are repeated and all distinctly white-pupilled. *Secondaries* marbled with narrow transverse bars, sometimes congregated into spots and bands of white, dark brown and pale brown scales, the latter sometimes tinged faintly with ochraceous.

especially toward the outer border; the dark brown scales congregate into a basal spot which is marbled with narrow bars of white; they form also the middle band, which is of nearly uniform width throughout, and is marbled within with white, grayish-white and light brown bars, is bordered on the inside broadly, on the outside narrowly, with whitish bands marbled with narrow transverse bars of dark brown; outside of all there is a broad band of lighter brown, made up of a nearly uniform marbling of dark brown, ochraceous-brown and grayish-white, the latter faintly dividing the middle with indistinct white spots in the interspaces; small white spots also upon the border in the interspaces of the median nervure, upon which rest larger dark brown spots, the eye



as on upper surface; the outer border of the middle band extends from the costal border crenulate to the second subcostal nervule in a general direction at right angles to the costal border; from here it extends to the extremity of the cell in one very large conical projection, and from the cell to the inner border moves in crenations, each of which occupies an interspace, gradually curving towards the base; the inner border moving from the costal edge has a slight tooth borderwards before reaching the subcostal nervure, reaches the middle of the cell, is there bent at right angles down the cell to a point opposite the origin of the first median nervule, and runs thence in a pretty regular curve to the inner border in general parallel to the opposite side of the band.

1 ♀; Pike's Peak, W. H. Edwards.

The specimen from which this description is drawn up is one somewhat rubbed, which should be taken into account in using the above description. The fringe is nearly gone; Edwards says, "alternate black and whitish." The nervures may have been flecked with white, but no trace remains.

3. *Chionobas Calais*.

Chionobas Taygete Edwards, Proc. Philad. Acad. 1862, 57.

Oeneis Taygete, ♀ (not ♂) Hübner, Samml. Exot. Schmett. Lep. I. Pap. I. Nymph. IX. Oread. D. Nubilæ 4, figs. 3, 4.

Expanse of wings ♀ 2.2 inches.

♀. Head, thorax and abdomen black with ochraceous hairs. Antennæ reddish-yellow, annulated, especially above, with reddish-brown; club reddish-brown, black-tipped. Palpi with ochre-yellow hairs, mingled with longer black hairs, which latter are especially prominent beneath and at the tip. Femora dusky; tibiæ and tarsi pale yellow.

Wings deep ochraceous-brown, flecked with black on the basal half and along the costal and outer margin of both wings, eye-like spots be-

fore the margin, beneath marbled with ochraceous and brown; the secondaries with a dark middle band; fringe dark brown, interrupted in the interspaces with grayish-white.

Above. *Primaries* ochraceous-brown, the costal border marbled with black and grayish-white, distinct next the base, forming a dark grayish band towards the tip, continued more broadly around the outer to the inner border as a dark brown band, the inner edge slightly crenulated, the outer edge distinctly black; a very broad band clouded with black, darkest at the borders, and somewhat tinged with ochraceous in the middle, crosses the middle of the wing; the nervure closing the cell is distinctly and narrowly edged with black; the outer border of the band starts from the dusky costal border beyond the cell at right angles to the last branch of the median nervure, projecting outwards as a short tooth upon this nervure, is there bent at right angles towards the base, and immediately thereafter bends again and passes in broad crenations to the inner, and subparallel to the outer, border; the inner border of the band crosses the cell irregularly between the origin of the first and second median nervules and nearer the latter; below the cell, it passes from the origin of the first median nervule parallel to the costal border, but is lost before reaching the inner border. Between this band and the base the ochraceous is considerably flecked with brownish atoms, less distinctly next the band; in the broad ochraceous band next the outer border, occupying the space left between the two dark bands mentioned, are situated in cells 2, 3 and 5, large, roundish, inclined to be pyriform, blind, eye-like spots, that in cell 3 a little smaller and rounder. *Secondaries*: basal portion to the extremity of the cell fuscous, largely tinged with dull ochraceous, except above the cell; toward the base very indistinctly marked with faint fuscous and ochraceous; the outer limit of this fuscous basal portion is that of the outside of the middle band beneath; the outer border of the wing from the tip of the first subcostal nervule to the anal angle has a narrow dusky band, narrower than that of primaries, blackish on the inside where it is very slightly crenulate, paler along the middle, the edge black again; the marbling of the under surface shows indistinctly through upon the broad ochraceous-brown band which occupies most of the outer half of the wing, and in the interspace between the first and second median nervules is a round, black, blind, eye-like spot, smaller than any of those of the primaries.

Beneath. *Primaries* considerably paler than above; the middle band of the upper surface distinct only at the borders, the lower portion of the outer border straight, the middle space being of the ground color,

with transverse, slightly wavy streaks, especially in the cell, of blackish-brown; frequent similar streaks in the cell between the band and the base; the costal edge distinctly marbled with black and grayish-white from base to apex, over which latter portion it is more diffused, though scarcely reaching the sixth cell except next the outer border, where it extends at least to the third median nervule, and is bordered toward the base by a narrow band formed of continuous shallow lunules reaching neither the costal nor the inner border; next to which is a broad ochraceous band, with infrequent transverse streaks of reddish-brown, which never cross the nervules; the eyes as above, though more ovoid in form, and that of cell 5 very indistinctly white pupilled. *Secondaries* marbled with transverse bars and streaks of blackish-brown and grayish-white, tinged with pale ochraceous-brown in the outer half of



the wing, and with darker ochraceous-brown in the middle of the band; at the base the bars are larger and about equally divided; in the band the darker ones are clustered along the borders so as to be continuous at the extreme border; in the outer half the marbling is pretty uniform, though less tinged with ochraceous next the middle band, the lighter colors prevailing throughout this portion; midway between the band and the outer border very indistinct pale yellowish-white spots in the interspaces; the eye reduced to an indistinct small round black spot; the outer border narrowly edged with black, not extending to either angle, a small white spot situated upon it in the interspaces; the inner border of the middle band is formed of a series of right angles from the costal border till it has passed the median nervure; in the space above the cell it forms a right angle whose limbs are equal, projecting borderwards, in the cell one whose limbs are unequal projecting basewards, the short limb being the continuation of that of the interspace above, extending to the middle of the cell, whence it is directed to the origin of the first median nervule, is again bent here at right angles before reaching it and continues to the internal nervure, whence it extends bent slightly borderwards to the inner margin; the outer border of the band starting from the costal border of the wing passes in one arch to the second subcostal nervule, here extends borderwards to the middle of the interspace opposite the extremity of the cell, and thence moves in a gradual crenulated curve, passing just beyond the extremity of the cell to the inner border; the band is broader than in most species of the genus, and is especially so on the median nervures; the nervures are all distinctly flecked with white.

1 ♀; Albany River, Hudson's Bay. W. H. Edwards.

Although Möschler refers in his synonymy of *C. Taygete* to all the figures given by Hübner as representing *Taygete* in his *Lep. Exot.*, yet he does not seem to include in his description such forms as Hübner figures for the ♀. I do not find any similar form of either sex figured or described anywhere which corresponds to this ♀ except the one described by Edwards referred to in my synonymy, and from a comparison of specimens from Labrador which agree perfectly, some (both ♂ and ♀) with the ♂ as figured there, and another (♀, Edwards' specimen) which agrees with the ♀ as Hübner represents it, I cannot now believe that they belong to one species; it would greatly surprise me if a large number of specimens should prove it. I have therefore described it here as a distinct species. The two forms on Hübner's plate are not those considered by some as distinct species under the names of *Taygete* (*Bootes* Bd.) and *Bore*; these, so far as I am acquainted with them, I agree with Möschler in considering as one species, to which the name of *Bore* must be given (which Möschler points out to be the older one), in accordance with the principle I would maintain that the oldest specific name must always be retained (unless preoccupied) whether given with a description of the norm or of an aberrant form.

The figure given by Hübner differs from the specimen here described, both of the same sex, in having the ground color of the upper surface lighter, but a single less distinct eye (in cell 5 of primaries) and a more distinct submarginal interrupted row of blackish bars on both wings; beneath the primaries are brighter, have the one eye largely pupilled with white, the middle band of the secondaries on both sides (on the outer most distinctly) bordered with whitish, and in having more clustered blackish scales next the margin forming an inconspicuous dusky band; the outer margin of the middle band, moreover, is indented throughout.

4. *Chionobas Bore*.

Chionobas Bore Schiödt, in Rink, Naturhist. Bidrag til en Beskriv. af Grönland, 64.

Chionobas Bootes Boisduval, Icones hist. des Lepidopt. I. 191, Pl. 37, figs. 4—6.

" Hist. gen. et Icones Lepidopt. de l'Am. Sept. 218.

Herrich-Schäffer, Syst. Bearb. d. Schmett. von Europa I. Tagfalter, 69.

Möschler, Wiener ent. Monatschr. IV. 342.

Morris, Synop. Lepidopt. N. Am. 72.

Chionobas Taygete Hübner, Samml. Exot. Schmett. Lep. I, Pap. I, Nymph. IX. Oread. D, Nubilæ 4, figs. 1—2.

Herrich-Schäffer, Syst. Bearb. d'Schmett. von Europa I, Tagfalter 70, Tab. xxi, figs. 112—113.

Doubleday, Westwood and Hewitson, Gen. Diurn. Lepidopt. II, 383.

Möschler, Wiener entom. Monatschr. IV, 342; VII, 213.

Expanse of wings ♂ 1.84—2.00; ♀ 1.96—2.12 inches.

Head, thorax and abdomen black, with hairs of the color of the upper surface of the wings; stalk of antennæ annulated with brown and grayish-white; club light yellowish-brown, faintly annulated with dusky, the tip much darker. Palpi white, with longer blackish-brown hairs beneath, tip of mingled hairs principally blackish. Femora with blackish-brown, tibiae with yellowish hairs.

Wings above; ♂ dark brown, ♀ paler yellowish-brown, with darker marginal bands; outer border narrowly edged with black; beneath flecked with hoary on apex of primaries and on whole of secondaries except the borders of the middle band and a darker submarginal band; fringe dull grayish-white, narrowly interrupted at the nervule-tips with blackish.

Above. *Primaries*: basal half of costal edge flecked or marbled with grayish-white and dark brown; ♂ uniformly pretty dark brown, with a slight yellowish tinge, with a blackish-haired streak as in ♂ of *C. Jutta*, only separated from the median nervure next the base. ♀ paler or darker yellowish-brown, with a more or less distinct dusky band along the whole outer border; the transverse costal streaks of the outer half of the wing sometimes indistinctly showing through from the under surface; generally without eyes, in cell 5 sometimes an indistinct brownish eye, largely gray-pupilled. *Secondaries*: ♂ as in primaries, the markings of the under surface showing through pretty distinctly; a submarginal band of indistinct yellowish-brown spots, between which and the border a very indistinct dusky band; ♀ the whole basal half dusky, sometimes less distinctly so next the base, the markings of the under surface showing through; outer half of wing paler than the primaries, a rather broad marginal band of blackish-brown, always more distinct on its inner margin, where it condenses into transverse blackish bars between the nervules, to which the band is sometimes almost confined, and upon which sit faint yellowish-white spots, barely discernible.

Beneath. *Primaries* paler than above; varying from pale to deeper yellowish-brown, at the apex grayish-white, extending down the outer border to the median nervules and sometimes spreading as a hoary tint over nearly the whole apex beyond the cell; the whole wing, except inner border, transversely barred with more or less clustered grayish-brown streaks, which almost always congregate with greater distinctness to form two larger narrow transverse streaks reaching from the costal quite or near to the inner border, one submarginal, the other crossing at

the extremity of the cell, bent at the last median nervule; they are also generally collected to form a slender streak between the two, extending from the costal border half way over the wing, and to form a spot or transverse streak in the middle of the cell; in cell 5 there is occasionally an indistinct small white spot. *Secondaries*: the basal portion of the wing before the band next the base is blackish-brown. marbled slightly with grayish-white, next the band grayish-white, mar-



bled slightly with blackish-brown, forming a narrow band bordering the middle band, broad on the costal border, narrow and more obscured on the inner; the band is rather broad, its outer limits distinctly though but narrowly blackish, its inner portion marbled with narrow, short, transverse streaks of blackish-brown and yellowish-brown scales, darker next the limits, sometimes obscured by hoariness, especially at costal border, where it is almost always present; the inner border forms a pretty regular curve bent at the extremities towards the apex, except that it forms a broad deep depression in the middle in the lower half of the cell, which reaches the origin of the first median nervule; the outer border is also pretty symmetrically curved except it bends abruptly at right angles on the second subcostal nervule, extending outwards a shorter or longer distance, and thence curves pretty regularly to the inner border, though when it extends outwards considerably at the second median nervule it generally has a slight depression at the first median nervule; it is generally toothed slightly on the subcostal half of its course, especially on either side of the second subcostal nervule, and crenulate on the median half, but it is sometimes even throughout its course; beyond the band the basal half is generally more or less hoary, with generally a distinct hoary band next the middle band; there is a submarginal band, generally of equal width with the hoary band, of uniform marbling of blackish-brown and yellowish-brown transverse streaks, washed more or less, or sometimes not at all, with hoary, in the outer margin of which are generally seen pale yellowish spots in the interspaces; next the border a marginal band generally of greater width than the preceding, of blackish-brown scales, more or less marbled next the margin with the paler colors and always most distinct away from the margin, forming there deeper or fainter spots of blackish-brown in the interspaces to which the band is sometimes limited, small white spots frequently sitting upon the border in the interspaces; nervures, when not rubbed, distinctly flecked with white.

2 ♂, 3 ♀; Hopedale, Labrador. Dr. A. S. Packard, Jr. Labrador. W. H. Edwards.

Among the specimens received through the kindness of Mr. Edwards, are a ♂ marked *Bootes* and a ♀ marked *Taygete*, so ticketed by Möschler, and both understood to be from Labrador. In agreement with Möschler I believe *C. Bootes* and *C. Taygete* to be the same species.

5. *Chionobas Oeno*.

Chionobas Oeno Boisduval, Icones hist. des Lepidopt. I. 195, Pl. 39, figs. 4—6.

" Hist. gen. et Icones Lepidopt. de l'Am. Sept. 220.

Morris, Synop. Lepidopt. N. Am. 72.

Möschler, Wiener, Entom. Monatschr. IV. 342; VII. 211.

Chionobas Also Boisduval, Hist. gen. et Icones Lepidopt. de l'Am. Sept. 222.

Morris, Synop. Lepidopt. N. Am. 71.

Möschler, Wiener, Ent. Monatschr. VII. 205.

Chionobas Crambis Doubleday, Westwood and Hewitson, Genera Diurnal Lepidopt. 383.

(Boisduval in his Icones hist. des Lepidopt. does not describe his *C. Also* as from America except the White Mountain specimens which belong to another species, *C. semidea*. By a strange confusion of etiquettes on specimens received originally from Dr. Harris, he speaks of it as called *Sat. eritiosa* by Harris. See my paper in Bost. Journ. Nat. Hist. VII. 618.)

Expanse of wings ♂ 1.78—2.04 in.; ♀ 1.96—2.14 in.

Head, thorax and abdomen black, with blackish-brown hairs; stalk of antennæ above blackish-brown annulated with white, below brownish-yellow delicately annulated with brownish; club above yellowish-brown, below brownish-yellow, tip more dusky. Palpi above whitish or grayish-haired, tip blackish-haired; beneath blackish-haired, more or less, sometimes very much, mixed with yellowish-brown hairs. Legs brownish, tibiæ lighter than femora.

Wings above varying from dark brown to yellowish-brown, primaries sometimes with small obsolete eye-like spots, secondaries with the design of the under side sometimes showing through; beneath, primaries like upper surface, hoary-tipped; secondaries marked with blackish-brown, ochraceous-brown and grayish-white, with a darker middle band bounded by grayish bands sometimes obscured by uniform marbling; the outer border of the wings delicately edged with black; fringe pure white, grayish-white or grayish-yellow, interrupted at nervule-tips with blackish.

Above. *Primaries* dark brown, more or less tinged with reddish, either uniformly or a little more considerably next the outer border, often deepening into very indistinct spots in the interspaces; sometimes uniform dark brown, considerably tinged with yellowish; sometimes slate-brown, the border paler or tinged with yellowish; the costal edge

more or less distinctly marbled with grayish-white and blackish-brown. in my specimens more distinctly in the ♀; occasionally in cell 5, very seldom in cell 2, and in one instance before me also in cell 3, very small, indistinct, generally very faintly gray-pupilled eyes; in the example which has an eye in cell 3, that eye is but a dot, those of cells 2 and 5 large, oval, blind; in one ♂ with Möschler's etiquette of "*Crambis*" there is a very indistinct, indefinite hairy spot on the median nervure as in *C. Bore*. *Secondaries* much like the primaries, more dusky on the basal half, paler in a submarginal band, in which are generally distinct, small, yellowish-white or ochre-yellow spots in the interspaces, with a blackish-brown or blackish submarginal band condensing into spots between the nervules; sometimes the markings of the under surface, and sometimes even the outer limit of the band, show through scarcely at all upon the upper surface, while in other cases all of the markings are plainly seen, especially on the outer half.

Beneath. *Primaries* scarcely paler than the upper surface; sometimes not at all, sometimes considerably, flecked with blackish-brown, occasionally condensing into minute transverse streaks, more abundant on the outer half of the wing; whole costal edge distinctly marbled with black and white; apex flecked or marbled with grayish-white and blackish-brown, seldom encroaching on the 5th cell; occasionally the cross nervule closing the cell narrowly edged with black; the eyes of the upper surface sometimes repeated beneath, and then similar in character; the individual before noted with the large spots, however, has them distinctly white-pupilled beneath. *Secondaries*: basal portion as far as the band either nearly uniformly marbled with grayish-white and blackish-brown, but with the darker colors slightly in excess near the



base, or distinctly darker next the base, and only distinctly gray in a band bordering the middle band which is very broad next the outer border and sometimes only linear next the inner border; in my specimens the former is generally the case in the ♀, the latter in the ♂, but I question whether a larger number of specimens would exhibit the same distinctions; the middle band is considerably darker, generally quite narrowly edged with blackish, within marbled with blackish and reddish-brown, the lighter colors gradually less distinct next the border; the band is not so broad as usual; its inner border passes in a regular curve from the inner border of the wing to the middle of the cell, not reaching so far outward as the divarication of the median nervure; from here it is bent abruptly toward the base and forms a broad, rounded and considerable

projection in that direction to the middle of the interspace beyond the subcostal nervure; the outer margin starting from the costal border runs generally in a straight line a little inwards to the second subcostal nervule; bent outwards, generally rather abruptly, it extends in a broad curve to the inner border, sometimes in a smooth line, frequently crenulated, occasionally slightly angulated; this broad curve is generally depressed basewards more or less at the first median nervule, but occasionally it is wanting; the abrupt change at the second subcostal nervule is also sometimes obscured so as to be unnoticeable by the angularity of the band at this point, and it is sometimes indistinguishable even where the course of the margin is smooth. Beyond the middle band the wing is marbled with blackish-brown, ochraceous and grayish-white, the latter most conspicuous on the portion next the middle band, forming a band bordering the middle band in which the ochraceous tints are seldom seen; between this and a dusky border band which is sometimes indistinct, sometimes conspicuous by the presence of blackish-brown spots in the interspaces either at its marginal or internal border, there is generally an indistinct band of blackish-brown and ochraceous marbling, with some interspersed scales of grayish-white; in this band are small, round, white, grayish-white or yellowish-white, generally distinct spots; sometimes the whole apical portion of this wing beyond the middle band is so obscured by grayish scales as to be nearly uniformly hoary, though deeper away from the border; sometimes the whole wing is so nearly uniformly marbled with blackish-brown and grayish-brown spots (not streaks), the latter occasionally tinged with ochraceous, that the middle band and all the other bands are quite obliterated; quite frequently the whole base as far as the outer border of the middle band is almost wholly obfuscated with blackish-brown or blackish so as to show no trace of the middle band except its outer border, in which case the outer half of the wing is generally nearly uniformly marked, and may even itself be almost wholly obscured by blackish; the modifications and interchanges of all these variations show, however, that all the specimens exhibiting them, including not only the variations heretofore referred by authors to *C. Also*, but also those specimens of greater uniformity of aspect referred to *C. Oeno* Bd, must be referred to one and the same species.

7 ♂, 5 ♀; Hopedale and Strawberry Harbor, Labrador; Dr. A. S. Packard, Jr. Labrador; W. H. Edwards.

Möschler, in his article upon the genus *Chionobas* in Europe (*Wiener Entomologische Monatschrift* VII, 169), and we believe all previous authors, have considered the species described by Boisduval under the

names of *C. Oeno* and *C. Also* to be distinct. On a most rigid comparison of Möschler's descriptions of the two forms, together with all his notes, and a comparison of the twelve individuals in the collection before me from Labrador, which must belong to one or the other or to both, undertaken, too, with a general bias in favor of Möschler's determinations as evincing evident care and good judgment, I must confess myself unable to see any good ground for considering *C. Oeno* as distinct from *C. Also*, notwithstanding Möschler's remark that "*Oeno* cannot easily be confounded with any of the allied species" (p. 213).

In the first place I would call attention to some incongruities in the descriptions of Möschler. In his description of *C. Also* he first says. "Primaries with or without 1-2 black, sometimes white pupilled eyes. Secondaries without eyes" (pp. 208-9). He next says: "All specimens agree in this, that the secondaries always bear an eye either on the upper or on the under side" (p. 209). A few lines after, under the description of the male, these words occur: "All the wings without trace of eyes" (p. 209). Only two lines after this we find, still under the description of the male, that there are "in the cells of all the wings yellow points, cell 5 of the primaries with a small blind black eye, which on the under side is distinctly white-pupilled" (pp. 209-10). The next reference we find to these eyes is under the description of the female, where the primaries are "either * * * without eyes, or * * with * * two black eyes in cells 2 and 5, of which the first is sometimes white pupilled, or * * * two eyes, of which sometimes both are pupilled, sometimes both are blind, sometimes one blind, the other pupilled" (pp. 210-11). Speaking further on of the underside in the female, he says: "Should the upper side of the primaries have eyes, beneath they are always white-pupilled" (p. 211). I will only add that the specimen of *Chionobas* before me, labelled "*Crambis*" by Möschler, (which he considers synonymous with *C. Also*) has no trace of eyes on primaries or secondaries above or beneath. Such discrepancies as these of course render this part of his description useless.

"*Oeno*," says Möschler, "cannot easily be confounded with any of the allied species; both the lesser size and the diaphanous coloring, but most especially the coloring of the under side of the secondaries, separate this species decisively from the others" (p. 213). We quote this to show that in these very points we cannot see why *C. Oeno* should be separated from *C. Also*. These are the distinctions as given by him.

I. The expanse of wings as given by Möschler, is for *C. Also* 42-50 millimetres; for *C. Oeno* 40-43 millimetres.

II. The transparency of the wings. Under the note in the description of *C. Also*, referring to a description by Boisduval, Möschler says: "These words (leur transparence est telle, que l'on voit à travers tout le dessin du dessous) certainly refer well to *Oeno* H. Sch., for I never found in *Crambis* (*Also* Bd.) the design of the under side of the secondaries appearing so distinctly on the upper side as is the case in *Oeno*" (p. 208). Further on, under the description of the upper surface of *C. Oeno*, he says: "The secondaries are of a like color with the primaries, the dusky marbling of the under side shines distinctly through especially on the outer half of the wing" (p. 212). No reference is made to such transparency of the wings in *C. Also*.

III. The design of the under side of the secondaries; the special distinctions insisted upon are:

A. The coloration of the nervures.

On this point, under the description of *C. Also*, Möschler says: "Nervures not flecked with white" (p. 209); and further on, "the nervures of the secondaries are not flecked with white on the under side" (p. 211). Under the description of *C. Oeno* we find these words: "Nervures * * delicately flecked with white" (p. 211); and again, "the nervures in all fresh specimens are rubbed with whitish and marbled by the black of the ground color" (p. 213). "In worn specimens" it is stated, among other things, that "the white flecking of the nervures is wanting" (p. 213). In his comparison of Boisduval's plates of *C. Oeno* and *C. Also*, he says, furthermore, "the nervures in fig. 6 are flecked with white as *Oeno* always shown them, but *Crambis* [i. e. *Also*] never" (p. 208).

B. Spots on the hind border of secondaries.

Under *C. Oeno* we find the "border with black spots situated between the nervures" (p. 211). This refers to the under side. A little beyond, describing the upper side of the secondaries, he says: "The border is characterized by clustered blackish atoms, which form on the nervures black spots situated on the white fringe, which in the ♀ are much more distinctly and broadly marked than in the ♂" (p. 212). Returning again to the description of the under side of the same, he mentions that "before the border the black condenses into spots which are both established upon the border and also cut through the fringe as well, whereby this appears more broadly dappled with black than in the allied species" (p. 213); but he does not here tell us whether they are situated upon or between the nervures; the former is the case both above and below in the specimens before me. In his comparisons of Boisduval's figures again, speaking of the under surface he says:

"*Crambis* [i. e. *Also*] also always wants the black spots situated on the border, which form a principal distinction in *Oeno*" (p. 208); and once more, "finally the row of black spots before the border shows itself distinctly only in *Oeno*, though in *Crambis* [*Also*] a dusky coloring extends along the border, yet does not exhibit so sharply defined deep black spots as in *Oeno*" (p. 209).

C. The general direction of the band.

Under *C. Also* it is stated that "on the outside the band runs from the inner border [costal border is meant] to nervure 6, where it is bent, whence it sometimes extends widely towards the border [outer border] to a pointed tooth, but more frequently forms only a short projection and continues gradually bent backwards to nervure 2nd, thence bent again, reaching the inner border. On the inside it forms on the front nervure of middle cell an arch upon the inside, which sometimes curves very strongly, but generally only a little, and then extends to the inner border in conformable curves with the other side" (p. 210); of the same parts in *C. Oeno* he says, "This band on the inside turns back towards the base to a greater or less extent on the subdorsal and subcostal nervures, whereby a concavity (*Einbuchtung*) is formed in the middle cell. Upon the outside it runs into a pretty symmetrical, bluntly indented* arch extending to the border, widest at the 4th nervure" (p. 212); and in addition to the distinctions given in these extracts, there is the following remark on the comparison of Boisduval's descriptions: "The expression 'crénelée,' which is applied to the outside of the middle band, suits perfectly the form of this band in *Oeno*, much less in *Crambis* (*Also*)" (p. 209).

D. The frequent obliteration of the bands by the uniform marbling or obfuscation of the whole surface.

Under *C. Also* he says, "In some specimens in my collection the whole under surface of the secondaries is so obscured by black marbling that the middle band appears scarcely darker than the ground, and the light bands on both sides of them only appear through indistinctly" (p. 210). Under *C. Oeno* in speaking of the gray bands bordering the middle band he says, "the inner is often wholly obscured by dusky atoms, and the outer also is often scarcely distinguishable, so that in such examples the whole wing appears uniformly marbled with white and black" (p. 213). He further remarks in his observations on Boisduval's figures and descriptions, "The description of the underside of the secondaries by Boisduval can be applied still less to *Crambis*

*A "variety" is mentioned where it is deeply indented.

[*Also*]. He says l. c. ‘*** traversé au milieu par une bande *** qui quelquefois se perd presque complètement dans les marbrures de fond ****.’ We cannot say of the latter species [*Also*] that this band blends perfectly into the design of the ground, for in *Crambis* [*Also*] the middle band is always distinctly separated from the ground color, while in dark colored specimens of *Oeno* the black marbling certainly covers band and ground color so uniformly, that it becomes difficult to distinguish the former in its course” (pp. 208, 9).

In regard to these various points of distinction which are now clearly set forth in opposition, I will bring forward the following considerations. I have under examination a ♂ of *C. Also*, marked *Crambis* by Möschler himself, as I am informed, which agrees well with the distinctive characters of *C. Also* as he gives them. I have also undoubted specimens of *C. Oeno* from Labrador, in one of which no trace whatever remains of the middle band upon one wing, and the scarcely discernible outline of its outer limit upon the other, which has also prominent black spots upon the border of secondaries, some of the nervures delicately flecked with white, and the markings of the under surface showing through upon the upper side with almost perfect distinctness; it measures, however, fifty millimeters in expanse of wings.

Now between these two I have not before me every shade of difference, but I believe that a larger number would show it unquestionably, for in the comparatively few which I have, I find those which I cannot reasonably place with one rather than with the other, which have the outer border of the band varying so much that in some I find it agreeing with *C. Also* in its abrupt arching of the central portion, sometimes bent at the second nervure and not at the sixth, sometimes at the sixth and not at the second, sometimes with a continuous curve, and in all these cases sometimes with crenulations, sometimes without, though the continuous curve is generally accompanied by crenulations, and the bending of the border at the second and sixth nervures to form the arching of the central portion is usually unaccompanied by crenulations; the flecking of the nervures with white appears to be equally unimportant. The specimen marked “*Crambis*” by Möschler, which is an undoubted *C. Also*, shows a portion of the nervures delicately flecked with white, while an unquestionable *C. Oeno* with nearly uniform black marbling shows none at all, and so it varies indiscriminately through the series; and further, although those which approach most nearly to the description of *C. Oeno* as given by Möschler do generally have black spots on the border, I have before me two individuals with uni-

form marbling, undoubted specimens of *C. Oeno*, which have no spots whatever, and of those about which I am in doubt whether to place with one or the other, some have and some have not these black spots. and when in this they approach *C. Oeno* they are quite as apt in their other characters to resemble *C. Also*. Neither am I able (the only other resort) to separate those with the nearly uniform marbling from all the rest, since some of the latter have the course of the middle band precisely the same, have the black spots on the secondaries, and show the markings through upon the upper side in some cases as well. So that the result of my comparisons is, that I cannot believe that the individuals separated by Möschler as two distinct species under the names which Boisduval first gave them of *C. Oeno* and *C. Also*, in reality belong to more than one rather more than usually variable species.

6. *Chionobas semidea*.

Chionobas semidea Edwards, in Morris' Synop. Lepidopt. N. Amer. 351.

Scudder, Proc. Essex Inst. III. 169.

" Bost. Jour. Nat. Hist. VII. 621. Pl. XIV, figs. 2-8.

Hipparchia semidea Say, Amer. Ent. Pl. 50.

" Ent. of N. Amer. (Ed. Leconte), I. 113. Pl. 50.

Harris, Ins. injurious to Veg. (Ed. 1862), 304, fig. 126.

Ctenonympha semidea Morris, Synop. Lepidopt. N. Amer. 80.

Chionobas Also Boisduval, Icones. hist. des. Lepidopt. I. 197.

" Hist. gen. et Icones Lepidopt. de l'Amer. Sept. 197.

Satyris eritiosa! Harris teste Boisduval, Icones hist. des Lepidopt. I. 197.—
(See my remarks on p. 13.)

Expanse of wings ♂ 1.80—2.06, average 1.92 in. ♀ 1.76—2.08, average 1.98.

Head, thorax and abdomen black with blackish brown and yellowish brown hairs, the latter especially upon the abdomen; back of head and front of thorax with many grayish scales. Antennæ brownish-yellow, generally paler or brighter on the club with a line of black scales above, generally continued to the tip, and of white scales on the stalk below; extreme tip of club often dusky. Palpi with long blackish hairs below, short whitish hairs above. Legs dark brown, femora darker than tibiæ or yellowish-brown; tibiæ, especially anterior pair, flecked with gray.

Wings above nearly uniform dark brown, the markings of the under surface of secondaries appearing through, the whole outer margin delicately edged with black; beneath, primaries a little paler, apex marbled

with black and white; secondaries marbled with blackish, blackish-brown, grayish-ochraceous and grayish-white, a broad dark middle band crossing the wing; fringe alternate brownish-white and blackish-brown, the latter at the nervure tips, wholly blackish-brown along the inner edge of secondaries.

Above. *Primaries* uniform dull brownish-fuscous, more or less slightly tinged with ochraceous; the whole costal edge, very narrowly at tip, marked with blackish-brown and grayish-white, generally quite distinctly; in cell 5 occasionally a minute gray-pupilled eye sometimes barely discernible; about one out of five of those under examination have it, though this number includes all which have the merest dot; the markings of the under side show through slightly at the apex. *Secondaries*: the markings of the under surface invariably appear upon the upper with considerable distinctness, as much, and generally more so than in *C. Oeno*; the basal half of about the same uniform tint as the primaries, or a shade darker, in the outer half more or less distinctly mottled with grayish-fuscous and brownish-fuscous, sometimes darker next the margin. Beneath. *Primaries* slightly paler than the upper surface; the costal border is marked with blackish and whitish, usually increasingly so away from the base, broadening into a spot at the apex, which, however, does not usually encroach on the fifth cell, except to form a similar border to the outer margin as far as the second median nervule; the eye when present is repeated below, just as minutely but generally distinctly white-pupilled; the only other marking which is generally seen upon all specimens is a dusky broad band bordering the outer limits of the cell, which is most distinct at its outer borders, one along the cross-nervule closing the cell, the other beyond not quite parallel to it, but rather more nearly at right angles to the costal border; this band extends to the third median nervule, or if it exists beyond it, it is either continued on as a fuscous blotch to the second median nervule or the darker streak of the outer margin only is bent towards the base subparallel to the outer margin of the wing and continues as far as the first median nervule. Besides these, however, there is usually a freckling of the wing with brown, either uniformly distributed or most frequently more distinctly on the outer half and especially the upper portion of it, or sometimes confined to the outer half only, sometimes clustering into short transverse streaks, especially between the extremity of the cell and the outer margin. *Secondaries*: basal portion marbled with blackish or blackish-brown and grayish-white, very seldom uniformly distributed, the latter conspi-



cuous only as a band bordering the middle band, broadest next the costal border, the latter generally entirely obscuring the rest of the basal field and sometimes quite or almost obliterating the grayish band, the middle band very broad, colored more uniformly than in most of the allied species, and darker in proportion to the rest of the wing than is usually the case in the other species, marbled with blackish and grayish-fuscous, occasionally tinged slightly with ochraceous, the black condensing along the borders into narrow bands, the rest of the band generally nearly uniform in tint and not often deepening in color from the middle; the inner border in passing from the costal margin is generally bent outwards before reaching the subcostal nervure with a slight generally angular pit, and then passing the subcostal nervure by but a little space is bent very deeply into a V-shaped, occasionally U-shaped depression, extending nearly to the inner border, the bottom of the depression reaching nearly, very seldom quite, to the origin of the first median nervule; I have one specimen where the inner border crosses the wing with but a slight trace of any depression; the usual direction of the outer border may be said to be that of two nearly or quite straight crenulate lines, bent upon the third median nervule as far beyond the extremity of the cell as the width between the nervules at this point, at an angle of about 85—90 degrees, occasionally projecting into a slender tooth at this point, one end of the band striking the costal border at such a point that a line drawn from it at right angles to the margin would strike about midway between the origin of the second and third subcostal nervules, the other striking the inner border at a point as far from the tip of the first median nervule as that is from the middle of the interspace between the tips of the second and third median nervules; this angle is, however, often obscured by a more or less regular curve to the whole line, which again is now and then indented in a similar manner to *C. Oeno*, but it almost invariably shows a tendency to return to this angular appearance, and the continuous baseward direction of the border as it approaches the costal margin is quite a peculiar feature in this species.

Beyond the middle band the wing is marbled with blackish-brown, grayish-ochraceous and grayish-white, the latter almost always condensed and connected next the middle band to form a band bordering it, rarely tinged faintly with bluish; sometimes the blackish-brown is condensed into spots sitting upon the outer border; very seldom indistinct whitish dots are present in the interspaces halfway between the middle band

and the margin; occasionally, though but very seldom, the outer half of the wing is uniformly marbled throughout, and in some individuals the whole wing is covered with nearly uniform marbling, or is so obscured by blackish that the markings as here described are indistinguishable, and in such cases the under surface of the secondaries cannot be distinguished from similar cases in *C. Oeno*; the nervures are not flecked with white.

Thirty ♂, twenty-four ♀.

Alpine summits of the White Mountains, New Hampshire, 5500—6300 feet above the sea.

(Harris remarks in his *Injurious Insects*, p. 304, that "it has also been seen on the Monadnock Mountain, and will probably be discovered on the tops of high mountains in our own State, if looked for at the proper season." Some other Satyrid must have been mistaken for this by the observer on Mt. Monadnock, I am very sure, though that mountain, with its barren summit, would be more favorable for its habitation than any in our own State, for the highest of these not only is wooded to the summit, but I have ascended it many times at all seasons of the year, on entomological excursions, without meeting with this butterfly.)

The first description and figure of this species was that given by Say in his *American Entomology*, plate 50. In this figure the secondaries are represented broader than in nature, and in the coloring it is not very accurate; the upper surface is not dark enough, and should not have the nervures so reddish as given there; the under surface of the secondaries never has so marked an infusion of ochraceous colors in the outer half, and when it is at all conspicuously present, it also exhibits it somewhat on the basal half; the character also of the markings on the basal half is an unusual one, not representing the norm.

The plate given in the republication of this work, with his other writings collected by Dr. LeConte, is one which was re-engraved for the work, the original being one of the few which were unfortunately destroyed. As it is a faithful copy, the faults of outline are retained; it was colored, however, from a specimen furnished by myself; the upper surface is thereby much improved, being in the main satisfactory; the under surface of the secondaries is, however, even worse, if anything, than the original, the ground color being given as almost dull olivaceous, and the marbling represented by coarse irregular blotching rather than by confluent, short, transverse streaks or bars; beyond the middle band the darker colors are just where the lighter ones should be; whitish bands are given only as very narrowly bordering the middle band, as I

have never seen them, and the outer border of the middle band is that of rather a peculiar variation, the exact counterpart of which I do not remember to have noticed unless when accompanied by grayish markings toward the outer border, entirely absent in this figure; something near it, however, is seen in those forms which show most resemblance to *C. Oeno*.

The description given by Harris in the posthumous edition of his work on Injurious Insects is inaccurate in stating that the male differs from the female in having the wings "paler and with more of an ochre-yellow tint." The figure is quite good for a wood cut, but the markings of the outer half of the secondaries beneath are too coarsely represented, and the specimen from which it was figured, probably furnished by myself, unfortunately again represents one in which the inner margin of the middle band, and the whole basal field is quite obscured by blackish; the outer margin of the middle band is well represented and normal.

The figure given by myself in my paper on the Insects of the White Mountains is much more satisfactory, and, indeed, leaves little to be desired that could be given in a plate of that kind. One or two points, however, may be mentioned: it is exceedingly seldom that specimens are seen with a narrow black band between the middle band and the base of the wing on the under side of secondaries; the inner margin of the middle band has in the figure an unusually shallow depression on the median nervure not nearly reaching its first branch; the outer margin of the same is not bent so abruptly as usual, and extends even further than usual up the costal border; and lastly, the upper side of primaries should not have so distinct a lighter outer half, since the color is nearly uniform, but the outer half should be represented as dark as the base; in the secondaries the diaphanous markings of the under side make the difference.

Dr. Behr having expressed (Proc. Calif. Acad. Nat. Sc. III. 165) his doubts about the feeding plant of *Chionobus semidea*, in consequence of some indefiniteness in my statement that they fed on a lichen (*Peltigera canina* Hoffm.), I will state what I know in regard to them more explicitly. I have never found more than six or eight specimens, and of these not more than half alive; those found alive were always found upon this fleshy lichen, but were never seen actually eating it, though if my memory serves me aright,* the lichen in one case had been eaten

*I did not then know the possible doubt of their feeding on anything else than Monocotyledons, as set forth by Dr. Behr.

at the edges; the adverse circumstances happening to attend the effort to rear them in the valley below were enough to account for my want of success. Mr. F. G. Sanborn has since discovered them, some drowned in pools of water, but all living ones crawling about on the rocks where this lichen grows, though never feeding.

In a paper already referred to, entitled "Remarks on some characteristics of the Insect Fauna of the White Mountains, N. H.," when speaking of this insect, I remarked as follows: "whether or not it is distinct from those of Greenland and Labrador, or the numerous, but most closely allied species which have been described and figured from northern Europe, I cannot, from the confusion in which the species of this genus appear to be, and for the want of any specimens from other quarters, at present determine, but satisfy myself, on this occasion, with a more detailed description of the species than has yet been given, only suggesting, that should it ultimately prove to be distinct, it will only be a case analagous to what we find in the species next to be mentioned," i. e. the presence upon the barren summits of a species of *Argynnis* (*A. Montinus* Scudd.), distinct from, though closely allied to *A. Boisduvalii* Somm., found farther north. Only a month or two afterwards Möschler's Memoir on the genus *Chionobas* in Europe appeared, in which the species described by previous authors were treated to a thorough revision, so that every difficulty from that source vanished, and at the present time the opportunity of examining quite a number of individuals from various parts of this country, belonging to all the hitherto described species recognized on the continent, has satisfied me that the conjecture ventured there is fully established; but I have found that the description last given by me, though "more detailed" than any previous one, was still not explicit enough to be used satisfactorily in distinguishing it from the allied species, and have therefore presented one here which will be sufficient, I hope, for that purpose.

It is more nearly allied to *C. Oeno* than to any other *Chionobas*, the two being true representative species rather than what I have termed equivalent species or species of replacement (Proc. Bost. Soc. Nat. Hist. IX. 106); it is, moreover, more nearly allied to those forms of the species which have been called *C. Oeno* by Boisduval than to those he would place in *C. Also*, although he referred it to his *C. Also*.

7. *Chionobas Nevadensis*.

Chionobas Nevadensis Boisduval MS., Behr, Proc. Calif. Acad. Nat. Sc. III. 163.

Another species of *Chionobas* is referred to by Dr. Behr in his interesting "Notes on Californian Satyrides" (l. c. pp. 163—166) not

yet described, but named in MS. by Boisduval *Neoadensis*. Dr. Behr says: "A few specimens of this new and as yet undescribed *Chionobas* were caught by Mr. Lorquin, the discoverer of the species, and named by Dr. Boisduval. Not possessing a single specimen of this rare species, I am not able to give a diagnosis, and have only an indistinct recollection, that the species bore most resemblance to the Gerontogeic *Ch. Tarpeja*, a Siberian species that has also been found on the summit of the Apennines, in Italy, but that in size it is superior to any *Chionobas* known to me."

Taking for granted that my views in regard to the distinction of the species of this genus in North America are just, and that Möschler has correctly stated the value of the differences he has noticed among those of Europe, with the exception of his separation of the individuals belonging to *C. Oeno* into two species (*Oeno* and *Also*), and admitting the exactitude of his assertions—and those of many others—that several species of the genus are common to the subarctic regions of either side of the Atlantic—we must picture to ourselves the genus *Chionobas* as composed of butterflies of a sombre appearance nearly uniform in coloration upon their upper surface, beneath brightened by blackish and and whitish contrasting colors, so arranged upon the secondaries as to form a band crossing the middle of the wing, of varying width and direction; the species inhabiting inhospitable regions, either (1) as far toward the poles as where the snow lies upon the surface of the ground by far the greater portion of the year, or (2) far above the limit of the trees growing upon the sides of lofty mountains in the temperate regions; and as to the geographical distribution of the species, either (1) common to the arctic regions of both sides of the Atlantic, the individuals of each species compassing the same range and character of variation upon either side, some (a) found throughout the arctic regions over a nearly continuous belt of country (*C. Jutta*, *C. Bore*); others (b) found at the extremes and not in the intermediate countries, such as Greenland (*C. Oeno*); or (2) confined to the arctic regions of Europe and not found in America (*C. Norma*, *C. Sculda*, *C. Tarpeja*) or (3) to the same regions of America and not found in Europe (*C. Calais*), or lastly (4) confined to the alpine districts of mountains rising in temperate latitudes on either one or the other continent (Europe *C. Aello*; Eastern America *C. semidea*; Western America *C. Chryxus*). The question then naturally arises, what relations of structure do the species of these different localities and varying range of habitat bear to one another? It has been asserted that species existing over a wide range

of country are more variable than those limited to a smaller area, and some arguments have been based upon this and similar assertions by those who would maintain the derivative theory of the origin of species; on this assumption, and in general, if holding the derivative view, we would consistently maintain it, we should expect to find (1) that *C. Jutta* and *C. Bore* were the most variable; (2) *C. Oeno* following next in that particular, with its transatlantic and cisatlantic members exhibiting among themselves some slight characters by which in some indescribable way, but with considerable certainty, the one could be separated from the other; (3) that *C. semidea*, restricted as it is so far as we know to an extremely meagre patch of country, would show the least variation of any, followed closely in that respect by *C. Aello*; and finally (4) that there would be close agreement between *C. semidea* and some Labrador—and probably purely Labrador—species, the relationship being of a similar kind to that exhibited by *C. Aello* to some North European—and probably purely European—species. In point of fact almost the exact opposite appears to be true. Möschler says of what he calls *C. Also*, that it varies more in design and coloring than any other species of the genus, and therefore more than *C. Jutta* or *C. Bore*. How much more must this be true when we combine with it in one species what he describes as *C. Oeno*; and yet in the species of narrowest domain, and probably of as limited a geographical area as any species of butterfly in the world, *C. semidea*, we find a range of variation almost, if not altogether, as great as is discoverable in *C. Oeno* in its largest sense, as I have used it. We find no difference in the individuals of *C. Oeno* from one side of the Atlantic compared with those on the other, any more than we do in *C. Jutta* and *C. Bore*, though sufficient attention has not yet been paid to this point. There is also a close agreement between *C. semidea* and a Labrador species, *C. Oeno*, closer than that which exists between *C. Oeno* and any other species in Labrador; but *C. Oeno* is not exclusively an American species, and although the European alpine species, *C. Aello*, is most allied to a purely European species, *C. Norna*,* it is not so closely related to it as the arctic European species are among themselves. We thus see that the relations of the alpine to the arctic species on the two continents are nearly the reverse; that while the American alpine species agrees very closely with a species not purely Labradorian, slighter affinities than ordinary bind the European alpine species to a strictly North European or to a purely Labrador one.

* Though I am in considerable doubt whether it has not more affinities with *C. Calais*, the purely Labrador species.

It would seem, too, as if the relations of these insects to the surrounding world, the levers by means of which Derivatists suppose Natural Selection to move the World of Life, were more constant than usual in species of this genus, confined as it is (and as no other genus of Diurnal Lepidoptera is) to alpine and arctic regions, and especially if Lichens are the food-plant of all of them, as I believe is the case with *C. semidea*.

Boston Society of Natural History, May 5, 1865.

ON SOME NEW SPECIES OF PSELAPHIDÆ.

BY EMIL BRENDÉL, M. D.

(Communicated July 10th, 1865.)

Entirely new forms of this interesting family of Coleoptera are daily discovered, and it seems necessary to settle the question, at least with some of them, in order not to be behind time.

By the kindness and liberal assistance of the heroes of American Entomology, Dr. John L. LeConte of Philadelphia, and Henry Ulke of Washington, D. C., I was enabled to acquaint myself with forms till lately unknown, besides those I collected in different parts of the U. S. Encouraged by so distinguished Entomologists, I undertook to describe the following forms, commencing with the only genus of Europe till now not known to be represented on this Continent.

BYTHINUS, Leach.

Antennæ distantes in fossa ante oculos insertæ 11-articulatæ.

Palpi maxillares 4-articulati, articulo primo filiformi secundo clavato, tertio globuloso, quarto magno securiformi.

Abdomen marginatum.

Thorace subglobosus, basi angustatus.

Tarsi monodactyli.

1. *B. sonatus*.—Fusco-rufus, pubescens subtilissime punctulatus, capite bifoveato, fronte emarginato, thorace globoso, truncato, unifoveato, elytris convexis, abdomine brevi marginato. Long 1.2 mill. metr.

Bythino macropalpi Europæ simillima. Fusco-rufus, brevissime pubescens. Caput læve, vertice stigmatibus binis leviter impressis, fronte sulco transversali inconspicuo leviter impressa, oculis paulo prominulis. Antennæ breviusculæ, in fovea sub frontis margine insertæ, pubescentes, articulo primo sequenti majore, hoc iterum majore tertio, 3—9 æqualibus, rotundatis, 10mo transverso obconico, ultimo maximo, inflato, ovato. Palpi maxillari minutæ, articulo primo et secundo filiformibus, tertio

globoso minuto, quarto magno fere securiformi. Thorax globosus ad basin truncatus lævis, parce pubescens, zona basali punctata et foveola basali mediana ornatus. Elytra subtilissime inconspicue punctulata, latitudine longiora, convexa, stria dorsali nulla, stria suturali integra, humeris rotundatis pendentibus. Abdomen marginatum pubescens, inconspicua punctulatum. Tibiæ posticæ arcuatæ, tarsis monodactylis.

Habitat Ludovicianam et Virginiam.

2. *B. carinatus*.—Piceus pubescens punctatus, capite carinato, foveis duabus ante oculos leviter impressis, antrorsum sulco conjunctis; fronte acuminato; thorace subgloboso, foveis subbasalibus tribus sulco conjunctis. Antennis 11-articulatis. Long 1.66 mill. metr.

Elongatus, piceus, pubescens. Caput pentagonale ad basin truncatum dense punctatum, medio carinatum, carina postice dilatata, utrinque late foveatum, foveis sulco antrorsum angulato leviter impresso connexis, fronte acuminato. Antennæ insertæ in fovea sub frontis margine, articulis duobus primis magnis, longitudine 4 æquentibus æquantibus, articulo primo cylindrico longissimo, 2^{do} incrassato globoso, 3.—5. oblongis æqualibus minoribus, 6.—8. æqualibus globosis, 9^{no} 10^{mo} que lato gradatim incrassatis transversis, ultimo majore ovato. articulis ultimis tribus longitudine duabus primis æqualibus. Palpi maxillares articulo primo filiformi, 2^{do} clavato tertio globoso, quarto securiformi magno. Thorax subrotundus latitudine vix longior, lateribus in medio rotundatim subangulatus, truncatus punctatus, ad basin trifoveatus, foveis sulco angulatim connexis, leviter impressis. Elytra thorace fere duplo latiora, antice angustata, convexa, punctata ad apicem truncata paulo declivia, stria dorsali ante medium desinente, stria suturali integra. Abdomen parce punctatum, pubescens, marginatum, segmento primo majore. Pedes punctati, tibiis pone medium arcuatis. Tarsi monodactyli.

Specimen unicum a Henrico Ulke in Pennsylvania detectum.

BRYAXIS, Leach.

Antennæ basi modice distantes, in fossula subfrontis margine insertæ.

Palpi maxillares 4-articulati articulo 4^{to} fusiformi.

Mentum cordatum basi angustatum.

Abdomen marginatum articulo 1^{mo} majore.

Tarsi unguiculo singulo.

3. *B. scabra*.—Niger, punctatus, antennis pedibusque rufis, capite punctato 3-foveato, thorace confluyente, forte punctato, trifoveato, elytris nitidis punctulatis, abdomine lævi pubescente. Long 1.33 mill. metr.

Statura *B. propinquæ*. Caput dense punctulatum, foveis duabus ante oculos instructis, fovea altera in frontis margine impressa, anten-

nis profus 11-articulatus. Thorax scaber vel densissime punctatus ad basin foveis tribus inconspicuis, fovea mediana minori. Elytra subtilissime dense punctulata nitida, tenuissimo pube brevi provisa, stria dorsali pone medium abbreviata. Abdomen læve, parce et breviter pubescens.

Femina antennis brevioribus differt.

Habitat in Insula longa Novoboracenci.

4. *B. minuta*.—Rufa, minutissime punctulata, dense pubescens, capite inter insertionem antennarum impresso, thorace unifoveato elytris convexis, abdomine brevi. Long 1.1 mill. metr.

Caput pentagonale, convexum, fronte emarginato. Antennæ sub frontis margine laterali in fossula insertæ, articulis duobus primis oblongis majoribus 3—8 minutis æqualibus moniliformibus, 9^{no} 10^{mo} que gradatim majoribus, ultimo ovato, longitudine penultimis duobus æqualibus. Palpi maxillares articulo tertio globoso, 4^{to} fusiformi. Thorax hirtus, rotundatus, convexus, truncatus, punctulatus, in basibus medio fovea minuta instructus. Elytra latitudine vix longiora, pubescens, invisibile tenuiter punctulata, stria dorsali brevissima ante partem quartam abbreviata. Abdomen densius pubescens, segmento primo majore, bistriato, striis brevissimis.

Differentia sexuum me evadit.

Habitat in Ludoviciana et Novo Eboraco.

5. *B. cavicornis*.—Elongata, rufa, thorace punctulato, foveis tribus intermediæ minore; elytris subtiliter punctulatis, antennarum articulo ultimo triangulari, emarginato. Long 2 mill. metr.

Bryaxi lunigeræ simillima, antennarum antem articulis ultimis tribus essentialiter differt. Antennarum articulo primo obconico, 2.—4. precedenti gradatim minore, 5—8 subæquali, 9^{no} majore, transversæ obconico, 10^{mo} præcedenti duplo longiore emarginato, fere reniformi, ultimo maximo triangulari, emarginato, non dissimili articulo ultimo palporum Tmesiphori.

Specimina masculina duo in Virginia dedecta a Clar. Henrico Ulke.

DECARTHEON.

Antennæ distantes, 10-articulatæ in fossula sub frontis margine insertæ. Palpi maxillares 4-articulatæ, articulo 4^{to} fusiformi.

Mentum basi angustatum.

Thorax unifoveatus vel lævis.

Abdomen marginatum, articulo primo majore.

Femora mediana maris plus vel minus armatæ.

Tarsi monodactyli.

Genus novum separatum a genere "*Bryaxis*."

6. *D. abnorme*.*Bryaxis abnormis*, Lec.

Mas femoribus intermediis supra tuberositate obsoleta provisa differt.

7. *D. longulum*.*Bryaxis longula*, Lec.

Mas femoribus intermediis supra excisis, spina brevi formantibus differt.

8. *D. formiceti*.*Bryaxis formiceti*, Lec.

Mas femoribus intermediis, supra in medio spina valida provisa differt.

9. *D. cornutum*.—Rubro testacea, elongata impunctata, pubescens, capite sculpto, thorace subgloboso, truncato, lævi, elytris paulo convexis, abdominis segmento primo carina transversa basali. Long 1.80 mill. metr.

Statura elongata Batriso similis, minus convexa. Caput quadratum angulis rotundatis, fronte sulco antrorsum semicirculari, leviter emarginato, vertice in medio tuberculo transverse oblongo, spinoso, occipite forte subito elevato, elevatione antice profunde emarginata, in cornua dua producta. Antennæ pilosæ 10-articulatæ, capitis thoracisque longitudine, articulo primo et secundo majore fere æquali, 3tio minore oblongo, 4to majore longitudine primo æquali, 4 sequentibus æqualibus minimis, globulosis, nono transverso majore, ultimo maximo, ovato, acuminato. Palpi minimi articulo secundo cylindrico, 3tio globoso, 4to ovato acuminato. Thorax subglobosus, politus, parce pubescens, impunctatus, basi sulco transverso inconspicuo. Elytra parce pubescentia, stria dorsali ante medium abbreviata. Abdomen pubescens, segmento primo ad basin carina transversa utrinque abbreviata instructo. Pedes pubescentes, monodactyli.

Femina capitis sculptura obsoleta antennis que simplicibus differt.

Habitat in Illinois et Pennsylvania. Specimen unicum masculinum in collectione mea alterum femininum in Coll. Dom Henrici Ulke.

10. *D. stigmatosum*.—Castaneum dense breviter pubescens punctatum, capite punctato, planiusculo, stigmatibus minutis quatuor semicirculariter dispositis, thorace rotundato, unifoveato, elytris convexiusculis, punctatis. Long 1.70 mill. metr.

Statura elongata, dense breviter pubescens, punctatum. Caput dense punctatum, plano-convexiusculum, fronte ad marginem anteriorem foveis minutis quatuor semicirculariter dispositis. Antennæ articulo 1—8 moniliformibus sensim deminutivis 9no subgloboso majore, 10mo maximo ovato. Thorax lateribus rotundatis, subtilissime punctatus, in basi medio unifoveatus, pubescens. Elytra punctata brevissime pubes-

cens, striis dorsalibus fere integris. Abdomen segmento primo utrinque juxta marginem impresso, bistriato.

Mas femoribus medianis apice anguste profundeque exciso.

Femina femoribus integris, antennarum articulis ultimis minoribus differt.

Habitat Novum Eboracum.

11. *D. exsectum*.—Piceum politum impunctatum, parce pilosum; capite bifoveato, sulcato; thorace obcordato, unifoveato, elytris rubropiceis, abdomine polito, segmento primo bistriato. Long 1.70 mill. metr.

Statura Bryaxis subtilis, impunctatum politum. Caput trapezoideum minute trifoveatum, fovea frontali minutissima cum alteris sulco capillare obsoleto connexa. Thorax obcordatus, truncatus, politus parce pilosus ad basin fovea punctiformi. Elytra polita convexa, stria dorsali leviter impressa, ad apicem obsoleta, ad basin dilatata, humeris pendentibus. Abdomen pilosum, politum impunctatum, segmento primo tenuissime bistriato, striis fere integris. Antennæ articulo primo cylindrico, articulis sequentibus subæqualibus sensim deminutivis, articulis ultimis tribus gradatim majoribus, ultimo maximo ovali. Femora dilatata. Tibiæ paulo arcuatæ.

Mas femoribus intermediis a medio excisis, spina valida.

Femina femoribus integris.

Præcedenti similis, sculptura tamen polita, impunctata, pube longa erecta et femoribus maris a medio excisis sine difficultate distinguendus.

Habitat Novum Eboracum et Pennsylvaniam.

12. *D. strenuum*.—Convexum fuscum dense, valde pubescens, capite inculpto. thorace obcordato, fovea basali punctiformi, elytra apice emarginata. Long 1.9 mill. metr.

Caput plano convexum tenue inconspicue punctulatum dense pilosum. Antennæ capite thoraceque longiores, dense pubescentes, articulis 3—5 æqualibus, 6^{to} globuloso paulo majore septimo, 7—9^{no} gradatim majoribus, 10^{mo} maximo ovali. Thorax rotundatus unifoveatus, pilosus. Elytra stria dorsali paulo obliqua, postice obsoleta, inconspicuo punctulata. Abdomen segmento primo majore, tenuiter bistriato, impunctatum. Mas ignotus.

Speciesum adhuc detectarum maxima.

Specimen unicum detectum in Pennsylvania a Dom. LeConte.

NOTES ON CUBAN SPHINGIDÆ.

BY AUG. R. GROTE,

Curator of Entomology, Buffalo Society Natural Sciences, etc.

The lepidopterous insects which form the subject matter of the present Notice, are contained in the Collection of the Entomological Society of Philadelphia, and were obtained by purchase, together with other very large entomological material, from Prof. Poey of Havana, Cuba, through the liberality of the late esteemed scientist Dr. Thomas B. Wilson, and intended by the latter for the scientific uses of the Society.

My sincere thanks are given to Mr. Stephen Calverley, for bibliognostic information, which I have used in writing the present Notice. I am also grateful to my friend Coleman T. Robinson, Esq., for material aid received, while, with accustomed kindness, Mr. Ezra T. Cresson, the well-known Entomologist, has lent me his very acceptable assistance.

Since my present comprehension of the limit of the family *Sphingidæ* accords with that given at sufficient length by Dr. Brackenridge Clemens in an able treatise, entitled "Synopsis of North American Sphingidæ," published in the Journal of the Academy of Natural Sciences of Philadelphia, pp. 97 to 189, for 1859, I do not add, where I could only encumber, to a definition the perspicacity of which I much admire. I present but a few remarks, drawn partly from the peculiar locality of the insects that I am about to notice, for consideration.

As understood in the treatise I have above alluded to, this family constitutes a perfect unity, which it loses, when, under any artificial term, we include either the *Ægeriidæ* (*Sesiidæ*) or the *Zygænidæ*, families in which analogical resemblances—with the one under present consideration, have been mistaken for structural affinities.*

In examining the representatives of the family *Sphingidæ* from the West India Islands, we are struck with the preponderance of those genera which resemble the *Noctuidæ*; in contrast with the represen-

* "Annäherungen wie Z. B. die der Sesioiden (*Ægeriidæ*) und Zygænen (*Zygænidæ*) an die Sphinginen (*Sphingidæ*) und dgl. halte ich geradezu für unrichtig." H-S. Lepidop. Exot. nov. a. m. cog. p. 56.

tatives of the family from the more northern parts of the North American Continent where the genera allied to the Bombycidae are more largely prevalent. As we progress towards the tropics, the *Sphingidae*, *Aegeriidae*, *Zygaenidae* and *Noctuidae*, afford the preponderant lepidopterous expression, while the extensive family of Bombycidae loses its character, developed under a colder climate, and becomes a more unimportant feature in the entomological fauna of the Torrid Zones.

I have consulted in the preparation of this notice, in addition to the illustrative works of the earlier authors, whose indifferent figures serve but too frequently to disguise specific names, the following classificatory works, which I now briefly refer to.

In 1816 Hübner published his "Verzeichniss,"* a work which has received most ungenerous and defective criticism,† since, for the age in which he wrote, Hübner was greatly advanced in his conception of generic values,‡ and his critics have occupied themselves but too frequently in creating generic synonyms at his expense, and in some instances with less felicity of limitation.

Hübner used the external accessories of a genus, without giving the structural form itself, to limit his generic separations. He was satisfied to record the superficial dissonance of distinctive structural form, without ascertaining the fundamental divergence that caused that form to vary in its entirety of physical expression. Coloration was not received by him clearly as an idea independent of the Pattern of Ornamentation; it is this latter which more distinctly goes hand in hand with generic structure in Zoölogy; the first is an independent specific value, or, in an extended sense, a family characteristic.

Less fortunate, perhaps, than in the Bombycidae, Hübner has arranged much discordant material under his genera in the present family, and many of his generic terms are consequently useless. This has probably arisen from his being autoptically unacquainted with very many of the species he has endeavored to arrange systematically, while the figures he was in consequence obliged to rely on, frequently allowed from their

* Verzeichniss bekannter Schmetterlinge, verfasst von Jacob Hübner, Augsburg, 1816.

† For instance: "J'ai du multiplier ces exemples, parce que, je le répète, on paraît vouloir aujourd'hui ériger le *Verzeichniss* en autorité, et j'avais besoin d'indequer pourquoi je le considère, avec mon collaborateur, comme une œuvre nonavenue, et pourquoi, je ne me suis point cru obligé plus que lui, d'employer les noms génériques, souvent rudes ou burlesques, de cet ouvrage mort né." Guenée Noct. 1, p. lxxiv.

‡ Packard, Notes on the Family Zygaenidae. Proc. Essex Ins. (1864.)

rudeness a wide latitude of interpretation. I need no excuse for using his generic term *Erinnyis*, under which he has arranged perfectly homogenous material; the elimination of the very natural genera *Ambulyx* and *Philampelus* had escaped his penetration.

In 1839 Dr. Harris published his "Catalogue of North American Sphinges."* In this the author has erected the genera *Philampelus* and *Ceratomia*. The systematic generic arrangement is I believe defective, while under the term "Sphinges," distinct families are massed together, in accordance with an idea which originated with Linnæus, although these are really destitute of structural affinities, as I have already stated.

In 1856 Mr. Walker revised this Family in the "Catalogue of Lepidoptera Heterocera," published by the British Museum. Still retaining the *Ægeriidae* as part of a Division which cannot rank as a Family, the *Sphingidae* are introduced in conjunction with foreign elements, and not received as a Family equivalent to the *Zygænidæ*, *Bombycidæ*, or other natural associations of genera as understood by Latreille, and to which the latter gave the proper significance of a Family name.

The arrangement of the genera, and the description and identification of the species, appear to me generally felicitous and satisfactory; the style in which the subject is treated by Mr. Walker, the industry shown in the compilation of the synonymy and the conscientiousness displayed in investigating questions of priority are worthy of acknowledgement, while the evident endeavor to insist on generic values, contrasts favorably with the looseness in generic reference displayed by many writers on the Lepidoptera.

From my material I have been able to differ from Mr. Walker, as will be seen by a reference to the synonymy I have adopted, as to certain of his specific determinations.

In the same year (1856) in which that Part of the British Museum Lists which contains the *Sphingidae* was issued, Prof. Burmeister † published a quarto pamphlet on the *Sphingidae* of Brazil.

In this the genera *Protoparce* and *Dilophonota* are erected, neither of which I have adopted, for the reasons that the latter is a generic term erected at the expense of *Erinnyis*, Hübner, while the former

* Descriptive Catalogue of the North American Insects belonging to the Linnæan genus *Sphinx*, in the Cabinet of Thaddeus William Harris, M. D., Librarian of Harvard University. American Journal of Science and Arts, No. 2, Vol. 36.

† Systematische Uebersicht der *Sphingidae* Brasiliens, von Professor Burmeister. Halle, 1856.

comes into contact with *Macrosila*, Boisd. apud Walker, issued at the same time, and I have given in the synonymy throughout the preference to Mr. Walker. Prof. Burmeister's genera seem feebly characterized, probably from want of extended material and needful dissectional study, while his reference of *Pachylia ficus*, to *Deilephila*, of *Chærocampa tersa* to *Philampelus*, affords little pretence for overlooking the priority of Hübner, on the score of defective generic appreciation. The definition of the genus *Protoparce* is, I think, incomplete, while it is evidently intended as a synonym of *Macrosila* Boisd. Based on *Sphinx rustica* Cramer, the Professor enumerates under it *S. Brontes* Drury, *S. Hylæus* Drury, *S. plebeia* Fab., *S. sordida* Harris, and *S. coniferarum* A. & S., a singular material to select, when we see that under *Sphinx* the Professor leaves *S. Antæus* Drury, *S. Florestan* Cram., *S. cingulata* Fab. and *S. carolina* L.

An affinity with *Acherontia* is claimed for the genus so constituted, which I am at a loss to perceive, and am decidedly of opinion does not exist.

I have already alluded above to the "Synopsis of North American Sphingidæ" of Dr. Brackenridge Clemens. The arrangement of the genera in this work I have mainly followed in the present Notice, and since the locality of the species I am considering is restricted, I have had this further reason for abstaining from making any innovation. The sequence of the genera in the "Synopsis" is founded on that of Mr. Walker in the Cat. B. Mus., and is mainly that of Hübner, commencing with *Sesia*, *Macroglossum*, and genera showing analogies with the *Ægeriidæ*. I have differed from the specific determinations of Dr. Clemens in certain cases,—for instance in the genus *Philampelus*, where I believe that *P. vitis* and *P. jussieuæ* are perfectly distinct and valid species and that the specimens described by Dr. Clemens under *P. vitis* belong to *P. jussieuæ*, and vice versa, etc. But, very generally, Dr. Clemens has taken the bibliography of the species from Mr. Walker, so that where I have differed from the latter I have equally differed from our American lepidopterist.

Respecting the larvæ of the American Sphingidæ much remains to be made known; the paucity of reliable figures of these is particularly noticeable. I have observed that the larvæ of *Thyreus abbotii* Swains., and certain species belonging to the genus *Philampelus* Harris, possess a tint of brown or green indifferently at maturity as the ground color, and have noticed the same appropriation of these truly cosmical tints in the larva of the Bombycid genus *Eacles* Hübner. In studying the

relations which the sub-family *Ceratocampadæ* (to which the genera *Citheronia* Hübn. and *Eacles* Hübn. belong) bears to the Sphingid genus *Ceratomia* Harris, and to the *Sphingidæ* generally, as in similar instances, we divest ourselves of the idea that we have to do with a so-called "connecting link" between two distinct Families, and agree, that, as is the case in Zoölogical Orders, Analogous Types may exist through which lepidopterous Families express in their component generic groups a certain conformity with the leading characters of a distinct family, while retaining the essential form proper to their own, and without losing true affinity in producing foreign analogy. It is evident that it is the larva of *Ceratomia* which mimics the *Ceratocampadæ*, and not vice versa, since the smooth larval form of the Sphingidæ borrows a character which is usually developed in the Bombycidæ, though peculiarly exaggerated in the sub-family which contains *Anisota*, *Adelocephala*, *Citheronia* and *Eacles*.*

Misled by an analogy of habit with the Humming Birds, the authors of the "Wiener Verzeichniss"† have classed the Sphingidæ as the highest family of the Lepidoptera, and have considered that in this analogy a sufficient value is demonstrated to allow of their juxta-position with the Aves.‡ An inspection of their illustrated Frontispieces, on which the feeding Vertebrate and Articulate are depicted side by side, teaches in a striking manner the value of the philosophical distinctions to be drawn between, and the ideas involved by, the terms "Analogy" and "Affinity."

I give here a few remarks and a generic description drawn from certain members of this Family found within the limits of the United States and Canada.

* I have stated (Proc. Ent. Soc. Philad., p. 320, 1865) that the larva of *Ceratomia* simulates that of *Citheronia*; in a greater degree, however, it simulates that of *Eacles*, belonging to the same sub-family, in the position, shape and consistency of the dorsal horn-like tubercles on the anterior segments. The imago of *Eacles*, however, is much less Sphinx-like than that of *Citheronia*. I have taken the larva of *Eacles imperialis* on the "gum," *Liquidambar styraciflua*, "beech," *Fagus ferruginea*, and "horse-chestnut," *Æsculus hippocastanum*.

† "Systematisches Verzeichniss der Schmetterlinge der Wienergegend." Wien, 1776.

‡ und in dieser Ordnung die Gattung der Honigsauger (Trochili) die letzte stehen könnte, wie ungewungen (1) würden sich unsere Abend-schmetterlinge daranschliessen. W. V. p. 23.

LEPISESIA, nov. gen.

A genus hitherto confounded with *Macroglossum*, but more nearly allied to *Sesia*, from which it is however quite distinct. The former genus, of which *M. stellatarum* is typical, is not represented in North America.

Head smaller and more obtuse than in *Macroglossum*, loosely scaled; antennæ shorter, more prismatic. In *Sesia* the head is more rounded, and freer from the thorax, more advanced; the antennæ are much longer and more robust; vertex narrower; the clypeus is shorter, episcanium broader, giving the head a more conical appearance. In the present genus the eyes are smaller compared with *Sesia*, while the wider vertex gives them a lower, more sunken position. In this respect the genus approaches *Macroglossum*, in which latter the flattened head, more prominent palpi and larger eyes, which are also somewhat differently placed, are distinguishing characters from *Lepisesia*.

The anterior wings are relatively much longer, narrower, external margin more oblique than in *Macroglossum*. The discal cell is longer and more constricted; median nervure depressed; all the nervules shorter. The costa is medially depressed and markedly contrasts with the conformation of both of *Lepisesia*, *Sesia* and *Macroglossum* in this respect; the internal natural size. nervure is less bent than in *Sesia*. The sub-costal nervure is curved upward beyond the discal cell; apex more produced than in either of the genera I have compared it with. The external margin is slightly excavate below the second median nervule, is more irregular and oblique, and less rounded. The posterior wings are small; external margin very straight, not rounded, apices produced. Costal and first sub-costal nervures diverging, leaving the interspace on external margin wider than usual. Discal cell large. First, second and third median nervules less propinquitous than in *Macroglossum*, more curved; internal nervure straighter. The nervulation has undergone important modifications, while the pterogostic characters in their entirety are very distinctive, and, without any sudden change, show the position of this genus as intermediate between *Sesia* and *Macroglossum*, while considerably modified from either.

The abdomen is more smoothly scaled and less obtusely terminated than in *Sesia*; anal segments contracting more suddenly than in *Macroglossum*.

The ornamentation is peculiar. Head and thorax are clothed above with similarly colored and disposed scales to those which are so charac-



Anterior wing
of *Lepisesia*,
natural size.

teristic in *Sesia*, while the wings are not limpid, and are without vitreous spots as in *Macroglossum*. The more unicolorous abdomen wants the "furry" appearance of *Sesia*, while the anal hairs are somewhat similarly arranged as in that genus, not exaggerated into the well-formed anal tuft of *Macroglossum*.

The single species, described by Mr. Walker, has been recently taken in Canada, and specimens are now contained in the Collection of the Entomological Society.

LEPISIESIA FLAVOFASCIATA.

Macroglossa flavofasciata, Barnston, Walk. C. B. M. 8, p. 87. (1856.)

Macroglossa flavofasciata, Clemens, Syn. N. A. Sph. 131. (1859.)

Above, the thorax and head are clothed with pale yellowish sericeous erect hair, mingled with blackish scales. Laterally the palpi, and the orbits of the eyes are deep black. Abdomen black, with sericeous hairs above on basal segment. Anal tuft black, with lateral sericeous hairs. The anterior wings are blackish with obsolete ornamentation; beneath, at base, covered with bright fulvous scales. Posterior wings black with a broad central bright fulvous fascia, which contracts, triangularly, towards internal margin. Legs black. Exp. ♂, 1.60 inch. Length of body .80 inch.

Habitat.—Canada. Coll. Ent. Soc. Philad.

The peculiar sericeous thoracic squamation of *Sesia*, and which is shared by *Lepisesia*, together with the vitreous wings of the former, have been made use of in instituting analogical comparisons with the hymenopterous genus *Bombus*.

CERATOMIA REPENTINUS, Clemens.

Boisduval's figure, Sp. Gen. Plate 15, and which he calls erroneously *Sphinx brontes*, refers to this species and should be quoted in the synonymy. Dr. Clemens was the first to describe and name the present species which he regarded as congeneric with *Ceratomia quadricornis* Harris. Under "*Sphinx Brontes*" I have more fully expressed my comprehension of the synonymy of Drury's species, while a misunderstanding has resulted mainly from Boisduval's error and the silence of Dr. Clemens as to the figure in the Species Général.

It is somewhat extraordinary, and merely adds to the confusion, that Dr. Herrich-Schäffer, Corr. Blatt, p. 149 (1863,) in speaking of the species which must be *Sphinx brontes*, mihi, states that Boisduval's

figure leaves no doubt of the species intended. No remarks are made on the striking discrepancy in the size of the head and prothoracic parts which at once separate Boisduval's figure and our common species, from the Cuban species. I need not state here that the ornamentation of the two species is, with a certain resemblance, quite distinct, while I can in no wise account for the remarks of Dr. Herrich-Schäffer, except upon the hypothesis that no rigid comparison has been instituted by the author between his specimens and Boisduval's figure, for I cannot suppose that *Ceratonia repentinus* occurs in Cuba, or has been sent him by Dr. Gundlach.

With regard to the position of our species I have elsewhere noted that it seemed to me ill-placed in the same genus with *Ceratonia quadricornis*, and that, with other whitish cinereous, rough-haired species of *Sphinx*, it seemed to form a passage to *Ceratonia*, in which *S. repentinus* would constitute the lowest link.

DEILEPHILA CHAMÆNERII, Harris.

The larva of this species is stated by Harris to differ from that of the European *D. Galii*, with which the American species is regarded as identical by Mr. Walker and Dr. Clemens. I find the following differences in the imago, which I am satisfied are specifically distinct. In our species the central fascia on anterior wings is of a warmer shade, not excavated inwardly at base, and not continued so near the apex as in *D. Galii*; the apices show a very distinct black streak, absent in the European species. The central fascia of the inferior wings is more suffused with rose-color. The basal abdominal segment is less black laterally in *D. chamænerii*, while I notice a few minor differences which are perhaps not constant, as are those I have cited. The fact that *Smerinthus Cerisii* Kirby, is certainly distinct from *Smerinthus geminatus* Say, an opinion I have entertained since studying Kirby's description and figure, has been recently ascertained by the discovery of specimens, as I am informed by Mr. S. Calverley, and it may be argued from this that Kirby's *Deilephila intermedia*, which appears to differ too much to be referred to Harris' species, may be ultimately discovered as a distinct species.

AELLOPOS, Hübner.**Aellopos Titan.**

Sphinx Titan Cramer, II. Pl. 142, fig. F. (1779.)

Aellopos Titan Hübner, Verz. Schm. 1407, p. 181. (1816.)

Macroglossum annulosum Swains, Zool. Ill. pl. 132. (1822.)

Macroglossa Titan Burm., Syst. Verz. Sph. Bras. p. 17. (1866.)

Macroglossa Titan H.-S., Corr. Blatt. p. 56. (1865.)

Dull blackish, with a slight olivaceous tinge; discal spot black, sub-obsolete. A median, straight, semi-transparent, whitish band, closely followed by a second much reduced. A somewhat arcuated, similarly colored band, formed of a double series of semi-vitreous lunulated spots, is continued from costa to second median nervule, beyond which it is obsolete, but very distinctly continued on the under surface,—the lunulated spots increasing in size to the interspace above internal margin. Terminal space with a paler, somewhat purplish reflection. Under surface dark-brownish; the whitish markings of the upper surface distinctly reproduced.

Posterior wings blackish, paler at base, shaded with yellowish along costa,—medially the yellow hairs, especially in the female, extend across the costal half of the wing forming an obsolete band. Beneath brown, with two median, parallel, contiguous, distinct, darker shade bands, largely shaded with white at base and along internal margin.

Head, and thoracic region above, dull-brownish with a slight olivaceous tinge. Abdomen olivaceous with the third abdominal segment white above; fourth segment with a large, dark brownish, lateral shade, which on fifth is much reduced, but obtains on the sixth entirely across the segment above. Anal hairs brown, olivaceous centrally.

Beneath, the palpi are whitish; the thoracic region and legs clothed with olivaceous whitish hair. A series of small white lateral dots at the lower margin of abdominal segments; lateral fringes interrupted with white. Two specimens, ♂ ♀. Exp. ♂ and ♀ 2.30 inch. Length of body 1.40 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 121 *Poey's MSS. Catalogue.*

Since the present species has been confounded with the following by Mr. Walker and Dr. Clemens, I omit the citation of the works of these writers in the synonymy of both species. Under the descriptive phrase, "*Var. abdomine sine fascia alba*," Prof. Burmeister places *Aellopos Fadus* Hübner, (*Sphinx Fadus* Cram. 61, C.) as identical with the present species. I have not seen the species from Surinam any more than the Professor, but, judging from Cramer's figure, I should certainly consider it to be a distinct species.

Aellopos Tantalus.

- Sphinx Tantalus* Linn. Syst. Nat. 803, 25. (1766.)
Sphinx zonata, Drury, 1, 57, pl. 26, f. 5. (1770.)
Sphinx Tantalus Cram. Exot. 1, 107, pl. 68, fig. F. (1779.)
Sphinx Tantalus Fabr. Ent. Syst. III, 379, 1. (1793.)
Sphinx Tantalus Fabr. Sp. Ina. II, 153, 1. (1781.)
Aellopos tantalus Hübn., Exot. Schm. (1806—1825.)
Macroglossa Tantalus Burm. Sph. Bras. p. 17. (1856.)
Macroglossa Tantalus H.-S. Corr. Bl. p. 56. (1863.)

Much smaller than the preceding, which it resembles. On anterior wings the median white band is obsolete, and the subterminal arcuated band of whitish semi-transparent spots is reduced to two or three unequal irregular spots towards the middle of the wing. Beneath, the median band is entirely wanting, while the subterminal spots are as on upper surface. The yellowish scales on upper surface of the posterior wings in *A. Titan* are absent, while the costa shows a paler, somewhat whitish, shade. The abdomen is paler and the brown terminal segmentary bands are brighter and more reddish than in *A. Titan*, from which it appears to me perfectly specifically distinct. Two specimens, ♂ and ♀. Exp. ♂ . ♀ 1.80 inch. Length of body ♂ . ♀ 1.00 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 125 Poey's MSS. Catalogue.

AELOPOS SISYPHUS (*Macroglossa Sisyphus* Burm.) from Rio Janeiro, belongs to this genus, which is distinct from the European genus *Macroglossum*.*

EUPYRRHOGLOSSUM, nov. gen.

From *Macroglossum*, with which it has been hitherto confounded, the present genus differs by the larger eyes which are more globose and placed somewhat differently, extending above nearer the antennal insertion. The epicranium is more elevated, reminding us of *Enyo*, from which the present genus is otherwise sufficiently distinct. The antennæ are slender, not prismatic, and terminate in a reflection which is very different from the acute hooklet of *Macroglossum*. The caputal squamation is dense, rising to a central longitudinal darker colored ridge, recalling *Hemeroplanes*. The flattened head of *Macroglossum* and *Aellopos* has undergone a change preparing us for the more conical and obtuse head of *Enyo* and *Perigonia*. The thorax is more

* I find that the ornithological resemblances of the European *Macroglossum stellatarum* have been expressed by different vulgar names. Our species of *Aellopos*, bear a certain general resemblance to *Procellaria pelagica*. So our "yellow bird" *Carduelis tristis*, finds its miniature and voiceless echo in the yellow Colias.

roundedly elevated and is stouter, while the prothoracic pieces are narrower. The abdomen is broader and shorter, furnished with short, even, separated, lateral hair tufts, closer and more squarely cut. The anterior wings are stronger, broader and larger; internal margin straighter; external margin proportionally longer, less evenly rounded, more excavate before internal angle and more produced medially. The costa at apex is more depressed. The



Anterior wing of
Eupyrrhoglossum,
natural size.

second median nervule is equidistant from the first and third at external margin, whereas in *Macroglossum* it is much nearer the third than the first, leaving the interspace between the first and second median nervules much wider than the rest.

The posterior wings are relatively much larger, external margin straighter, hardly excavated before anal angle.

The ornamentation differs, and is *sui generis*. The primaries are complexly mottled and banded; the secondaries crossed by a narrow yellow band, neatly defined, very different from the ornamentation of the posterior wings in *Aellopos* and *Macroglossum*; the abdomen is ornamented with neatly-defined maculations.

Eupyrrhoglossum Sagra.

Macroglossum Sagra Poey, Cent. Lepid. Decade 2. (1832.)

Macroglossa " Walker, C. B. M. Part VIII, p. 89. (1856.)

" " Clemens, Syn. N. A. Sph. p. 132. (1859.)

A single specimen in indifferent condition. I express the hope that the Society will be able to obtain better material of this handsome species described by Prof. Poey in 1832 (1837 Clem.) and dedicated by him to M. Ramon de la Sagra. *EUPYRRHOGLOSSUM CECULUS* (*Sphinx Ceculus* Cramer, Pl. 146, fig. G) from Surinam, is congeneric with the present species, while apparently sufficiently distinct specifically, to prevent its being confounded with *E. sagra*. Dr. Clemens seems to have been acquainted with both species. Prof. Poey's figure appears to me, indeed with all the Plates in the "Centurie de Lépidoptères," to be most excellent in every respect. The position of this genus may undergo some slight change when a more comprehensive study of this family, embracing its representatives from different Zoological Provinces, is undertaken. The condition of the specimen has prevented a thorough examination of the posterior wings.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 543 Poey's MSS. Catalogue.

ENYO, Hübner.***Enyo lugubris.***

- Sphinx lugubris*, Linn., Mant. 537.
 " " Drury, I, 61. Pl. 28, fig. 2. (1770.)
 " " Fabr., Sp. Ins. II, 140, 4. (1781.)
Sphinx Fegesus, Cram., Pap. Exot. p. 56. Pl. 225, E. (1782.)
 " *lugubris* Fabr., Mant. Ins. II, 92, 4. (1787.)
 " " Fabr., Ent. Syst. III, 1, 356, 5. (1792.)
 " " Abbot & Smith, Ins. Georg. I, pl. 59. (1797.)
Enyo Phegeus Hübner, Verz. Schm. p. 132, No. 1422. (1816.)
Enyo lugubris Hübner, Zuts. 3, 298, fig. 595, 6. (1825.)
Thyreus lugubris Harris, Cat. N. Am. Sph. p. 26. (1839.)
Enyo lugubris, Walk., C. B. M. Part VIII, p. 113. (1856.)
Pterogon lugubris Burm., Sph. Bras. p. 16. (1856.)
Enyo lugubris Clem., Syn. N. Am. Sphing. p. 134. (1859.)
Enyo lugubris H-S., Corr. Blatt, p. 57. (1865.)

Under "Var γ ." Walker has perhaps included specimens of *Enyo danum*.

This species differs from the following by the stronger, posteriorly better-defined, blackish terminal shade: by the absence of a darker shade on the second basal segment above, by the non-excavation of the apical interspace on external margin, and by its generally larger and stouter size. Two specimens ♂ and ♀. Exp. ♂ and ♀ 2.50 inch. Length of body ♂, 1.40, ♀ 1.30 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 541 *Poey's MSS. Catalogue*.

Enyo Camertus.

- Sphinx Camertus* Cram., Exot. III, 53, Pl. 225, fig. A. (1782.)
Enyo Camertus Hübner, Verz. Schm. p. 132, No. 1420. (1816.)
Enyo Camertus Walk., C. B. M. Part VIII, p. 114. (1856.)
Pterogon Camertus Burm., Sph. Braz. p. 16.
Enyo Camertus H-S., Corr. Blatt. p. 57. (1865.)

The specimens correspond, as well as usually the case, with Cramer's figure. Since I do not see any difference in the squamation of the "legs" between this and the foregoing species, I do not quote Dr. Clemens' description here. The color is generally more brownish than that of *E. lugubris*, the apical interspace is excavated, the semi-luni-form paler shade which extends from apex to second median nervule is larger; the oblique median even line is followed by a broad darker diffuse shade continued very nearly to internal margin, beyond this the first of the tremulous transverse lines is somewhat more projected superiorly; the external margin is less abruptly excavate below the subcosto post-apical nervule. The coloration is generally paler, less blackish, and the insect is smaller; anal angle of posterior wings less pro-

duced. Three ♀ specimens. Exp. ♀ 2.00 to 2.30 inch. Length of body ♀ 1.00 to 1.10 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 98 Poey's MSS. Catalogue.

I am unwilling to see in this species a variety of *E. lugubris*, as Dr Herrich-Schæffer is disposed to regard it. The specimens are constant in the differences I have noted and seem to me sufficiently specifically distinct.

Enyo Danum.

Sphinx Danum Cram., Pap. Exot. III, 53, Pl. 225, fig. B. (1782.)

Enyo Danum, Hübner, Verz. Schm. 132, 1421. (1816.)

Enyo Danum, Walk., C. B. M. Part VIII, p. 118. (1856.)

Pterogon Danum, Burm., Sph. Bras. p. 16. (1856.)?

Enyo Danum, H-S., Corr. Blatt. p. 57. (1865.)

The excavations of the anterior wings are modified from either of the above species, while more nearly approaching *E. Camertus*. On the posterior wings the excavations before anal angle are different, the tegument at the submedian nervure being more produced so as to form very plainly a double excavation between the medio-posterior nervule and the internal nervure.

The coloration is very dark brown, while the discal dot is not black but pale brown on anterior wings. On posterior pair in the male there is a small patch of pale yellowish hair at extreme base of the wing along internal margin; in the female this patch is much larger, spreading nearer to anal angle. The whole body is somewhat slenderer than in the preceding species. Two specimens ♂ and ♀. Exp. ♂ 2.40, ♀ 2.20 inch. Length of body ♂ and ♀ 1.30 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 99 Poey's MSS. Catalogue.

Professor Burmeister's description differs as to the ornamentation of the posterior wings from both Cramer's figure and my specimens, which agree together. It is not improbable that his specimens are erroneously referred to the present species. His description of the internal margin of the posterior wings does not correspond, and if by "Auf der Unterseite der Oberflügel ist ein weisser Punkt" he alludes to that on the costa before the apex, the species does not differ in this respect from the preceding two. If, however, a discal spot is meant, it is certainly wanting in my specimens of *E. danum*, where there is in the female a mere trace of a paler shade on the discal cross-vein. Dr. Clemens does not mention this species, probably since Mr. Walker merely gives "Surinam" as the habitat. I have expressed my opinion that perhaps under *E. lugubris* "*Var γ. Nigro-fusca; alæ posticæ striga*

apud marginem interiorem albido-flava," Mr. Walker has recorded specimens of the present species.

HEMEROPLANES, Hübner.

Hemeroplanes pseudothyreus, n. s. (Plate 1, fig. 1.)

Callionma oictus? H.-S., Corr. Blatt. p. 57. (1865.)

Not *Sphinx oictus* Cram., Pl. 216, fig. F. (1782.)

Dull chocolate-brown; beneath paler, mixed with cinereous scales. Head produced, elongated, somewhat flattened, eyes large and salient; maxillae well developed; prothoracic parts well extended before the insertion of the primaries. Anterior wings pale brown, a roundedly oblique blackish basal line, within which, on costa and below sub-costal nervure, are large blackish marks. Beyond, an outwardly rounded, oblique, blackish transverse line runs from costa to internal margin, which it joins near the base. Space between this latter line and the basal line, paler than the rest of the wing. Median space large, darker shaded in the interspaces between the nervules posteriorly, where it acquires a faint purplish reflection; on the discal cross-vein a somewhat L-shaped white mark, above which a second, smaller, ovate and obliquely placed. From the internal margin a blackish irregular line extends to the larger white mark and runs partly parallel to the transverse anterior line. Transverse posterior line blackish, undulate, outwardly arcuate, followed by a paler coincident shade. Subterminal space paler, acquiring with other portions of the wing an obsolete greenish tinge which is difficult to define. In the post-apical interspace a large, distinct, irregularly triangular, black spot. A black undulate line margins inwardly a very narrow, darker, terminal space, which extends from immediately below apex to below first median nervule, somewhat as in the genus *Enyo*.

External margin of the wing excavate, resembling the species of *Enyo*, and in a less degree *Thyreus abbotii*, to the general coloration of which the present bears a resemblance which has suggested the specific name. Apical interspace not excavated; from post-apical to medio-superior nervules the excavation is somewhat abrupt and deep.

Posterior wings resembling anterior in coloration. Pale at base; crossed by a diffuse prominent median blackish shade band, beyond which the wing is paler. From anal angle, which shows a few mixed whitish scales, a narrow black line runs towards costa, but is lost before traversing half of the wing. A terminal dark brown shade band, broadest at costa, becoming obsolete before anal angle.

Beneath, the wings are paler than on upper surface. Both pair traversed by a very distinct (especially on posterior pair) tremulous black-

ish median band. This is followed by a second, quite linear, distinct, undulate between the nervules on anterior, but dentate on posterior wings. Terminal margin blackish between apical and medio-superior nervules on anterior wings.

Head with a median dark line, which separates beyond the "collar" into two, margining the tegulæ inwardly, these latter mixed with a few lateral white scales; two lateral brownish prothoracic spots. Abdomen conical: a few lateral whitish, and below these blackish, scales at base; anal segment with a few whitish hairs, not tufted (unless by accident the specimen has become deprived of the anal squamation); colored much as the thoracic and caputal parts. Legs unicolorous with body—except two reduced spurs at the extremity of the middle and hind tibiæ—unarmed. One ♂ (?) specimen. Exp. 2.50 inch. Length of body 1.30 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 124 Poey's MSS. Catalogue.

Under the present generic name Hübner has arranged four species of Sphingidæ figured by Cramer on Plate 216, and called by that author *Sphinx Pan.* fig. D, *S. Triptolemus*, fig. F, *S. Pluto*, fig. E, and *S. oichus*, fig. C. These species seem perfectly well associated, and while resembling *Enyo*, are alighter, alenderer; the head more produced and flattened. The anal segments of the males are not provided with the square cut tuft of *Enyo*, nor are the anal segments so suddenly constricted. The anterior wings are provided with triangulate albate marks, reminding one of *Calliomma*, though without sharing the lustre of the latter genus, from which the present is very amply distinct by the excavation of the external margin of the anterior wings, less prominent palpi, stouter antennæ, and more developed maxillæ.

The present species differs from Cramer's figure of *S. oichus*, too much to allow of its being referred to that species. The gray color of Cramer's figure, the different shape of the discal albate spots, the course of the transverse posterior line, the punctate squamation, are very distinctive, while the lateral prothoracic brown spots are present in *Hemeroptanes pseudothyreus*, but much reduced.

PERIGONIA, Boisduval.

Perigonia lusca.

Sphinx lusca Fabr., Sp. Ins. II, 140, 5. (1781.)

" " Fabr., Mant. Ins. II, 92, 5. (1787.)

" " Fabr., Ent. Syst. III, 1, 356, 6. (1792.)

Perigonia lusca Walk., C. B. M. Part VIII, p. 101. (1856.)?

" " Clem., Syn. N. Am. Sph. p. 138. (1859.)?

" " H.-S., Corr. Blatt. p. 56. (1865.)

Mr. Walker has referred *Perigonia stulta* Boisd., H-S. Exot. fig. 106, as a synonym of this species, but I believe it is distinct. The following are some of the differences:—The size of *P. stulta* is smaller; the shape of the external margin of the anterior wings is modified from that in *P. lusca*, being more produced medially and at internal angle. The shading and coloration of the terminal space is different. In *P. lusca*, a well defined blackish line runs from apex to internal angle, which is entirely wanting in Dr. Herrich-Schäffer's figure. Finally, the yellow of the posterior wings is more intense, and absorbs the entire base of the wing in *P. stulta*. Like the species of *Enyo*, the species of *Perigonia* are nearly allied and easily to be confounded, which however does not lessen their specific validity. Two specimens, ♂ and ♀. Exp. ♂ 2.10, ♀ 2.30 inch. Length of body ♂ and ♀, 1.20 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 444 Poey's MSS. Catalogue.

***Perigonia Lefebvrii*.**

Macroglossa Lefebvrii Lucas, H.S. Corr. Blatt. p. 147. (1863.)

Perigonia Lefebvrii H-S. Corr. Blatt. p. 56. (1865.)

Smaller than the preceding which it resembles, but differs as follows:—The median line on anterior wings is not followed by a dark diffuse shade as in *P. lusca*, and the markings generally not so strong; the external margin is more angulated and less rounded; the yellow of the posterior wings is more intense and like that in *P. stulta*; there is no yellowish patch at anal angle as in *P. lusca*. The female specimen sent is much darker than the male, which it otherwise resembles. Two specimens, ♂ and ♀. Exp. ♂, 1.80 inch. ♀ 1.90. Length of body 1.00 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 120 Poey's MSS. Catalogue.

I have not had access to M. Ramon de la Sagra's work in which Lucas' description is contained, but have used instead Dr. Herrich-Schäffer's very acceptable *resumé* of its lepidopterological contents, given in the pages of the "Correspondenz Blatt." Dr. Gundlach seems to have sent a specimen of *P. lusca* under the present name to Dr. Herrich-Schäffer; I do not doubt the specific validity of my specimens, or the correctness of their identification with *Macroglossa Lefebvrii* Lucas.

CALLIOMMA, Boisduval.

***Calliomma Lycastus*.**

Sphinx Lycastus Cram., Pap. Exot. IV, 180, Pl. 381, fig. A. (1782.)

Oreus Lycastus Hübn., Verz. Schmett. 136, 1465. (1816.)

Calliomma Lycastus Walk., C. B. M. Part VIII, p. 110. (1856.)

Sphinx Galianna Burm., Sph. Braz. p. 6. (1856.)

Calliomma Lycastus Clemens, Syn. N. Am. Sph. p. 141. (1859.)

Calliomma Lycastus H.-S., Corr. Blatt. p. 57. (1865.)

Sphinx Purce Fabr., quoted by Mr. Walker as a synonym of this species, if identical would have priority, while both Dr. Herrich-Schäffer and Prof. Burmeister regard it as a distinct species. With respect to *Sphinx Galianna* Burm., from the short comparative description, it would seem that it is identical with Cramer's species. While Cramer's figure otherwise very nearly corresponds to the Cuban specimens, it differs by the absence of the very brilliant, argent, pyriform, discal spot which shows a single inward projection at the superior linear part. In the description, however, Cramer alludes to the silvery mark in the following words which altogether but indifferently apply—"Sur les ailes supérieures se trouvent quelques petites taches, argentées dont celle, qui est dans la partie intermédiaire, a le plus beau lustre." I have copied the sentence exactly as it stands in the original. This species, if not identical with Cramer's *Licastus*, may be known as *Calliomma Galianna* (*Sphinx Galianna*, Burm.), a name which would have better claims for adoption had it been more properly defined. Relying apparently on its absence in Cramer's figure, Prof. Burmeister has assumed the absence of the silver-spot in the insect itself, I judge without consulting Cramer's description which I have quoted above. Mr. Walker's description evidently refers to the present species. Dr. Clemens has not seen the species apparently. Two specimens, ♂ and ♀. Exp. ♂ and ♀ 2.60 inch. Length of body, ♂ 2.20, ♀ 2.30 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 90 Poey's MSS. Catalogue.

PERGESA, Walker.

Pergesa thorates.

Sphinx thorates Hübner, Zutr. Exot. Schm. fig. 525-6. (1825.)

Pergesa thorates Walker, C. B. M. Part VIII, p. 151. (1856.)

" " Clemens, Syn. N. Am. Sph. p. 145. (1859.)

" " H.-S., Corr. Blatt. p. 58. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 2.70, ♀ 2.60 inch. Length of body, ♂, 1.40, ♀ 1.50 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 76 Poey's MSS. Catalogue.

This species differs from *Theretra Porcellus* Hübn., from Europe, by the longer antennæ, as stated by Mr. Walker, and I think differs otherwise generically from the European species.

The genus *Pergesa* is the first in the present Collection belonging to a Tribe of the family Sphingidæ, which may be called—*Chærocampini*,

in accordance with my views respecting the internal arrangement of lepidopterous Families, and which have resulted partly from a study of the learned "Classification of the Coleoptera of North America," by Dr. John L. Leconte, a work which, while it has been ignorantly styled an "Elementär-Buch" by a German critic, possesses great originality and lucidity of composition and arrangement, rendering it a very valuable addition to scientific knowledge. The genus *Calliomma*, closes the Tribe *Macroglossini*, while *Pseudosphinx*, inaugurates the more typical Tribe of the Family—*Sphingini*. A fourth Tribe—*Smerinthini*—is not represented in the present Collection, while I reserve an amplification of this arrangement to a different Paper.

CHÆROCAMPA, Duponchel.

Chærocampa Nechus.

- Sphinx Nechus* Cramer, II, Pl. 178, fig. B. (1779.)
 " " Fabr., Sp. Ins. II, 152, 56. (1781.)
 " " Fabr., Mant. II, 98, 61. (1787.)
 " " Fabr., Ent. Syst. III, 1, 377, 63. (1793.)
 " " Gmelin, ed. Syst. Nat. 1, 5, 2384, 89.
Theretra Nechus Hübner, Verz. 135, 1447. (1816.)
Chærocampa Chiron Walk., C. B. M. P. VIII, p. 132. (1856.)
 " " Clemens, Syn. N. A. Sph. p. 150. (1859.)
Not Sphinx Chiron Drury, Exot. I, 56, Pl. 26, f. 3. (1770.)
Chærocampa Nechus, H-S., Corr. Bl. p. 58. (1865.)

Green. Anterior wings rather intense and vivid green; nervules in terminal space inconspicuously and minutely covered with dark scales, and bordered faintly with pale yellowish testaceous scattered scales. Base of wing clothed with dark scales, forming a small, blackish, irregular patch extending to costa and mixed inwardly with paler scales. Below, immediately on internal margin at base, is a small though sufficiently prominent, somewhat elongated, pale-yellowish patch, the scales composing which are long and hairy.

The entire median space from costa to internal margin is of a vivid green, concolorous, without markings except a small distinct pale yellowish discal dot.

A very oblique, wide, sub-terminal band runs parallel with external margin from costa, where it is widest, spreading narrowly to the apex, to the internal margin where it also widens narrowly as at costa, spreading to internal angle, which latter is minutely fringed with pale yellowish. This band is composed of brownish scales, which form a prominent, costal, sub-triangular patch and are mixed in parts with blackish, and is traversed by blackish lines, the latter most distinct at the centre in the ♀, where they are arcuate between the veins and the band is narrowest. In the ♂ at the centre of the wing this band is obsolete and the

external defining blackish lines are not observable. Where this subterminal band dilates apically on the costa and on internal margin within internal angle, it is composed of blackish scales, the latter shade more prevalent in the ♀ than in the ♂, in which also this subterminal band is most distinct. Terminal space green, widest at the centre, concolorous with median space. Fringes brownish, except at internal angle.

Posterior wings blackish, pale yellowish on costa; a pale yellow, subterminal band, constrictedly interrupted above anal angle and divided by the nervules, which latter are more or less covered by darker scales, into sub-triangular spots, of which the largest and most isolated surmounts anal angle; the anal space also largely yellow. Fringes very pale yellowish.

Under surface of both wings bright ferruginous ochraceous, irrorate with darker dots and lines. The external defining lines of the subterminal band of the upper surface are here represented very distinctly and are arcuate between the veins, enclosing a brighter ferruginous yellowish space, analagous to the subterminal band of the upper surface; terminal margins of both pair tinged with olivaceous.

Thorax and head above olivaceous-green, with a lateral line on both sides running from the tips of the tegulæ, where it is darkest, above the eyes to tips of palpi. Some darker hairs mixed at base of thorax.

Abdomen above green without spots and bands, though there is a series of paler segmentary defining shades. Beneath, the abdomen is clothed with mixed fawn, whitish and ochreous scales, which extend laterally upwards, where they are darkest. Under surface of thoracic region and palpi clothed with dense, mixed ferruginous and yellow, hairy squamation; two lateral green large subtriangular patches, beneath anterior wings and extending in front of them. Legs finely scaled, paler outwardly. Exp. ♂ 2.50 inches. ♀ 3.00 inches. Length of body ♂ 1.50 inch. ♀ 1.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 81 of Poey's MSS. Catalogue.

Chærocampa Chiron Drury sp., seems to me, judging by the figure, to be a distinct species. Cramer's figure, on the other hand, refers undoubtedly to the present species.

Chærocampa Gundlachii.

Chærocampa Gundlachii Herrich-Schæffer, Corr. Blatt. p. 149. (1863.)

" " H.-S., Corr. Blatt. p. 58. (1865.)

Green. Anterior wings of an olivaceous-green, of a duller shade than the thoracic region above; external margin not so oblique, not apically so falcate as in the preceding species. Base of wings clouded with

confused blackish scales. Median space olivaceous-green, concolorous; a small whitish discal dot, clouded outwardly with blackish scales. An oblique, even, subterminal, blackish line, bordered inwardly with a pale shade, runs from internal margin to just below costa, which it does not attain, becoming obsolete in the space below. This line is most distinct on internal margin, where it is slightly dilated by a few blackish, scattered scales. Terminal space olivaceous-green, concolorous with median space and widening towards internal margin; fringes brownish except a very few scales at internal angle, which are whitish.

Posterior wings entirely blackish-brown, immaculate, concolorous, with whitish fringes.

Under surface olivaceous-green; the anterior wings largely suffused basally with brownish, which shade extends beyond discal spot. A subterminal, narrow, even, brown line runs across both pair and on posterior pair is slightly bent below costa. The green posterior wings show a few scattered brownish scales.

Head and thoracic region dark intense green above. A lateral marginal white line extends from base of anterior wings above the eyes to tips of palpi.

Abdomen above green, mixed with a few brownish scales. Beneath slightly paler; on fourth and fifth segments the brownish color forms a moderate clouded patch.

The thoracic region beneath and outside of palpi are unicolorous green. Legs finely scaled, dirty whitish outwardly, inwardly the tibiae are clothed with greenish squamation. Exp. ♂ 2.00 inches. Length of body 1.20 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 97 of Poey's MSS. Catalogue.

Agrees very well with Dr. Herrich-Schæffer's description as above cited, except that the hind wings show no ochraceous shade at internal angle,* where they are perhaps insensibly paler.

Chærocampa irrorata, n. s. (Plate I, fig. 2. ♂.)

Allied to *Chærocampa Gundlachii*. Dull reddish fawn color with a slightly roseate tinge, irrorate with minute blackish scale patches. At the base, along the costa and on the disc, the wing is more or less clouded with a darker shade; discal spot dark, very minute. The costal edge and edge of internal margin are paler. An even, dark brownish, oblique, subterminal line runs from internal margin much within inter-

* Hfl. schwarzbraun, mit ockergelben Wisch im Afterwinkel; H-S. Corr. Blatt. p. 149. (1863.)

nal angle, to sub-costal space where it becomes obsolete, not attaining the costa; this line is slightly margined inwardly along its length by a paler shade and is somewhat, but very slightly, arcuate. Terminal space similarly colored to median, widening to internal margin, and inferiorly and apically more or less suffused with a darker shade. External margin not very oblique, nor sub-apically falcate, resembling in this respect the preceding species.

Posterior wings blackish-brown, centrally dull-reddish along all the margins, paler shaded at anal angle; fringes white.

Under surface of wings paler than upper surface, with extremely scattered and sparse irrorations. The anterior wings at base show a small dull brownish patch and a bent subterminal line apparent at and shortly below costa, thence discontinued.

Head, and thoracic appendages above, rich reddish-brown. A very distinct, white, lateral line runs from extreme base of thorax to tips of palpi above the eyes.

Abdomen paler than thorax, a little darker above, the segments slightly margined by paler shades. Palpi, under surface of abdomen and thoracic region concolorous with the under surface of the wings, while slightly more reddish. Legs finely scaled; outwardly clothed with whitish scales, inwardly concolorous with under thoracic region. The sexes do not differ except very slightly in the general shading; the female seems to be the darkest, but I have not discovered other differences. Exp. ♂ 2.20 inches, ♀ 2.50 inches. Length of body ♂ 1.30 inch, ♀ 1.30 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 1003 of *Poey's MSS. Catalogue*.

This species in general coloration resembles distantly *Darapsa charilus*, but the color is neither so bright nor intense. In the design of ornamentation it resembles *C. Gundlachii*, to which it is nearest allied, while its superior size and very distinct and differing general coloration will at once distinguish it. It is perhaps the species described under the number "6" by Dr. Herrich-Schæffer, *Corr. Blatt.* p. 58, 1865, but which is not named by that author.

Chærocampa Porcus.

Oreus Porcus, Hubn., *Exot. Schm. Lep.* 2, Sph. 3. (1824.)

Darapsa Porcus, Walk., *C. B. M.* Part VIII, p. 187. (1856.)

Chærocampa Porcus H.-S. *Corr. Blatt.* p. 58. (1865.)

Dusky olivaceous; anterior wings very falcate at the apices, which latter are somewhat depressed, rounded along external margin, narrow. An arcuated row of subterminal dusky dots on the veins; a very faint,

oblique, discontinued, dentate line beyond the disc; discal spot dusky, distinct, very small; an angulated very indistinct sub-basal line. The wing subcostally, before the apex, irregularly sprinkled with reddish-ochraceous scales; a dusky shade spreads along the costa at the middle of the wing and extends undefinedly downwards beyond the discal spot. The ground color is a peculiar obscure dusky purplish, becoming somewhat dark olivaceous towards the base. The whole wing is destitute of any very distinct markings, except the subterminal row of spots on the nervules.

Posterior wings dull black, testaceous along the costa, very slightly pale blackish before the anal angle on internal margin; fringes whitish.

Under surface of both wings dull grayish with a warm purplish tinge, sprinkled with dusky irrorations, and with a subobsolete, subterminal series of dots on the nervules; on anterior pair the basal half centrally is dusky, discal dot white.

Head above, and thorax, dark dusky-olivaceous. A narrow white stripe margins the thoracic parts, laterally obsoletely continued to base of antennæ, beyond these, above the eyes, it is more distinct. Palpi externally, dusky purplish-gray, terminal joints tinged with olivaceous. Under surface of thoracic region and abdomen quite pale, dull, purplish-gray; upper surface of abdomen darker, without ornamentation of any kind. Legs finely scaled, like the under corporal parts in coloration, narrowly margined laterally with whitish.

One male specimen. Exp. ♂, 2.80 inches. Length of body ♂, 1.50 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 94 of Poey's MSS. Catalogue.

A peculiarly graceful dusky species, with very falcate apices of anterior wings. The general style of coloration and ornamentation bears a certain resemblance to the figure of *Darapsa Butus* Cramer sp., but that species is evidently quite distinct. The corporal parts are somewhat stouter than in the other species mentioned in this paper excepting *C. Nechus*, and, perhaps, *C. tersa*.

Chærocampa Robinsonii, n. s. (Plate 1, fig. 3, ♂.)

Chærocampa falco H-S., Corr. Blatt. p. 148. (1863.)

Not *Chærocampa falco* Walker, C. B. M. Part VIII, p. 132. (1856.)

♂. Pale testaceous-brown; beneath, tinged with dark ochraceous. Anterior wings striate, external margin rounded, apex falcate, general shape of both wings as in *Chærocampa tersa*, to which this species is nearest allied, but is smaller and otherwise specifically distinct. Base of anterior wings and along costa to discal spot, powdered with grayish

scales. Discal spot small, black, distinct. At one-third of the length of the internal margin from base, three curvilinear, black, shade streaks, merged together inferiorly, run very obliquely towards the apex, becoming obsolete below the pale apical space; a fourth, in the pale space externally, is subobsolete. From extreme apex three or four similar but paler, more linear streaks, separating as they proceed, run inversely towards internal margin, before attaining which they become subobsolete. The wing is palest along internal margin from the base of the bands at the basal third to internal angle, and again subapically, while on the costa and spreading slightly below at apical third, the wing is covered with dark ochreous scales. Under surface of both pair, shaded with bright ochreous, sparsely sprinkled with dark scales and with a subterminal row of black dots on the nervules; terminal spaces darker.

Posterior wings brownish-black; testaceous-yellow along costa at base; anal angle rather largely testaceous yellowish, from whence a narrow, similarly colored band, divided obsoletely by the darker squamation of the nervules, runs to sub-costal interspace near the apex; fringes whitish.

Head above, and tegulæ, olivaceous-brown, the latter with a distinct ochreous median longitudinal stripe; disc of the thorax cinereous. A broad whitish stripe runs from the tips of the palpi above the eyes to the base of the thorax, widening at the base of anterior wings laterally, where it becomes somewhat cinereous; abdomen pale brownish, with a slight reddish tinge and with two broad longitudinal darker shade bands above, running close together, beneath paler, and, with under surface of thoracic region and palpi, presenting the same shade as upper surface of abdomen, mixed with a few whitish hairs. Legs whitish outwardly, brownish inwardly; antennæ whitish above, testaceous beneath.

♀. Dark testaceous-brown. Differs from the ♂ by the darker coloration; the three anterior curvilinear stripes are more fused, forming a broad shade behind, the fourth, in the paler space, more continued and distinct. The posterior wings are more brownish, with the yellowish sub-terminal band much reduced, more disconnected. Body, as indeed the entire insect, greatly darker. Exp. ♂ 2.20 inches, ♀ 2.30 inches. Length of body, ♂ 1.30 inch. ♀ 1.40 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 946 of Pory's MSS. Catalogue.

Nearest allied to *Chærocampa tersa*, with which it coincides in the shape of the wings, but the present species is smaller, while the external margin is slightly more rounded; the striate, black, shade lines originate further from the base and are curved, not straight, while the

posterior wings are paler, the yellow band not so distinct and macular as in that species.

From a figure of *C. falco* Walk., executed under the superintendence of Mr. Walker, and for permission to examine which I am indebted to Mr. S. Calverley, the present species widely differs. In the Mexican species the anterior wings are more falcate, the external margin greatly straighter, while the terminal space is much paler, enclosing a very distinct black band, which dilates triangularly on internal margin; the external margin of posterior wings is also much straighter, the yellow color more largely predominates, the black space in the centre of the wing being reduced to a narrow band; the abdominal ornamentation also differs, while the species is much larger than its Cuban ally, the latter more nearly allied to *C. tersa*.*

I dedicate this species to the Entomologist and my kind friend, Coleman T. Robinson, of New York City.

Chærocampa Tersa.

Sphinx Tersa, Drury, Exot. I, 61, Pl. 28, fig. 3. (1770.)

Fabr. Sys. Ins. II, 153, 59. (1781.)

Cramer, Exot. IV, 226, Pl. 397, fig. C. (1782.)

Fabr. Mant. Ins. II, 98, 65. (1787.)

Fabr. Entom. Syst. III, I. (1793.)

Abbot & Smith, Nat. Hist. Ins. Georg. I, 75, Pl. 38. (1791.)

Theretra Tersa, Hübner, Verz. 135, 1449. (1816.)

Chærocampa Tersa, Harris, Sill. Journ. V. 36, 303, 4. (1839.)

Metopsilus Tersa, Duncan, Nat. Libr. 37, Pl. 5, fig. 1; Pl. 6, fig. 1.

Chærocampa Tersa, Walk., C. B. M. Part VIII, p. 131. (1856.)

Philampelus Tersa, Burm., Syst. Ueb. Sph. Braz. p. 4. (1856.)

Chærocampa Tersa, Clem., Syn. N. Am. Sph. p. 150. (1859.)

" " H-S. Corr. Bl. p. 58. (1865.)

The specimens sent do not differ from those which I have examined from different parts of the United States.

Two specimens, ♂ and ♀. Exp. ♂, 2.70, ♀ 2.80 inches. Length of body, ♂ and ♀, 2.55 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 512 Poey's MSS. Catalogue.

DEILEPHILA, Ochsenheimer.

Deilephila Calverleyi, n. s. (Plate 1, fig. 4, ♂.)

Allied to *Deilephila lineata*, and with a certain resemblance to *Deilephila chamænerii*. Anterior wings dull brownish, very faintly olivaceous.

* "Dass die von mir beschriebene Art (Corr. Bl. 1863, p. 148) als Varietät hieher gehören solle, wie H. G. meint, kann ich nicht glauben, obgleich ich die richtige Bestimmung nach Walker nicht verbürgen kann." H-S. C. B. 1865, p. 58. Mr. Gundlach's supposition I regard, with Dr. Herrich-Schäffer, as decidedly erroneous.

The central, oblique, pale fascia which proceeds from the apex, is narrower, more irregular, and less neatly defined than in either of the above mentioned congeners. It joins the internal margin at nearer the middle, widening on the margin, where it is composed of white scales sprinkled with brownish. The nervules are obsoletely paler than the ground color of the wing. The terminal space is wider than in *D. lineata* and much as in *D. chamænerii*; fringes on internal margin white.

Posterior wings smaller than in *D. lineata*, very slightly excavate before anal angle on external margin, which latter is more rounded than in allied species. A median dull red band, narrowest at costa, nowhere undulate or constricted, becoming white on internal margin, somewhat as in *D. chamænerii*. Base of the wing dull blackish, paler along costa; the subterminal dull blackish band is straight, nowhere constricted or undulate, slightly excavate between the nervules; terminal space reddish, broader than in allied species; fringes white.

Under surface of both pair of wings quite similar to that of *D. lineata*, but with a dark sub-apical zig-zag streak on the primaries from the costa, and an interrupted straighter one on the secondaries, issuing from the costa before the straight sub-basal transverse band, which latter it joins before the middle of the wing.

Head and thorax olivaceous-brown, darker shaded on the tegulæ, which are margined with white stripes, making four thoracic white stripes as in *D. livornica*. Abdomen, dull pale brownish, with subobsolete ornamentation; the segments show alternately paler and darker dorsal shade bands. The second and third segments show each a lateral black spot, of which that on the second segment is much the largest; no dorsal marks as in allied species; the segments laterally show discontinued white margins, of which the first is continued across the abdomen above. Antennæ whitish, paler than in allied species, much as in *Deilephila Euphorbiæ* from Europe.

One male specimen. Exp. ♂, 2.70 inches. Length of body, 1.50 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 954 Poey's MSS. Catalogue.

I dedicate this species—which I have compared studiously with its congeners, and am satisfied of its specific distinctiveness—to Mr. Stephen Calverley, of New York city, whose kind assistance and advice I have frequently had recourse to in scientific matters.

Deilephila lineata.

Sphinx lineata, Fabricius, Sys. Ent. s. Ins. (1775.)

" *daucus*, Cram., II. 41, pl. 125, fig. D. (1779.)

" *lineata*, Abbot, Smith Ins. Georgia 1.77, pl. 39. (1797.)

Deilephila daucus, Stephens, Ill. Brit. Ent. Haust. I, 126, 4.11. (1828.)

" *lineata*, Harris, Cat. N. A. Sph. Sill. Journ. (1839.)

" *daucus*, Walker, C. B. M. VIII, p. 171. (1856.)

" *lineata*, Clemens, Syn. N. A. Sph. Journ. Phil. Acad. Nat. Sci. p. 143. (1859.)

" *daucus*, H.-S. Corr. Blatt. Reg. p. 58. (1865.)

" *lineata*, Grote, Proc. Ent. Soc. Phil. Vol. 4, p. 319. (1865.)

Two specimens, ♂ and ♀.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 513 *Poey's MSS. Catalogue*.

The specimens do not differ from a number of individuals taken in different parts of the United States, the Territories and Canadas, that I have examined. I give, after examination, the priority to Fabricius, who intended our species, distinct from the European *Deilephila livornica*, in his original description, which reads as follows:

"*Sphinx lineata*: alis virescentibus; fascia striisque albis; posticis nigris: fascia rubra. Habitat in America. Statura præcendentis. Caput virescens, stria lateralibus alba. Thorax virescens, striis tribus albis duplicatus. Abdomen cinereum, albo nigro-que maculatum. Alæ anticæ integerrimæ, fascia media striisque sex fasciam secantibus abbreviatis, albis. Margo posticus cinerascens. Subtus omnes cinerascens, atomis viridebus."

The trivial name *lineata* has been given to the European *D. livornica* by certain authors, while from the above it is evident that Fabricius intended the American and not the European species, a specimen of which latter I have before me, and which differs from the present species by the absence of the intermediate white stripe on the tegulæ as well as by the abdominal ornamentation, which latter character seems not to have been hitherto dwelt upon. In the synonymy I have given merely the citation of Fabricius' first notice of the species in his "Systema Entomologiæ sistens Insectorum classes, etc." Flensburgi et Lipsiæ, 1775. *Deilephila lineata*, Stephens Ill. Brit. Ent. Haust. 1, 126, 3, pl. 12, fig. 1, refers to the European *Deilephila livornica* and not to the present species.

PHILAMPELUS, Harris.***Philampelus vitis.***

Sphinx vitis, Linn. Syst. Nat. p. 801, No. 16. (1766.)

" " Drury, Exot. 1, 60, Pl. 28, fig. 1. (1770.)

" " Fabricius, Sp. Ins. II, 147, 35. (1781.)

" " Cram. Exot. III, pl. 267, fig. C. (1782.)

- Sphinx vitis*, Fabr. Mant. Ins. II, 96, 39. (1787.)
 " " " Ent. Syst. III, 1, 369, 41. (1793.)
 " " Abbot & Smith, Ins. Georg. I, 79, Pl. 40. (1797.)
Dupo vitis, Hübner, Verz. Schm. 137. (1816.)
Philampelus vitis, Harris, C. N. Am. Sph. p. 19. (1839.)
 " " Walk., C. B. M. Part VIII, p. 176. (1856.)?
 " " Burm., Sph. Braz. p. 3. (1856.)
Philampelus Jussieuæ, Clem., Syn. N. Am. Sph. p. 157. (1859.)
Philampelus vitis, H.-S., Corr. Blatt. p. 58. (1865.)

The hind wings are pale greenish at base and below costa; along the external margin from costal angle to medio-posterior nervule, is a broad terminal pink band, within which a broad black fascia, interrupted by greenish scales on the nervules, and terminating below medio-posterior nervule in two narrow lines, outside of which latter a brownish square spot on terminal space above anal angle. Internal margin largely pink; two black spots below the disc; a few white scales within the terminal black lines above anal angle.

Two specimens, ♂ and ♀. Exp. ♂, 3.60, ♀ 3.30 inches. Length of body, ♂ 2.00, ♀ 1.80 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

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***Philampelus fasciatus*.**

- Sphinx fasciatus*, Sulzer, Gesch. Ins. Pl. 20, fig. 1. (1776.)
Sphinx vitis, Cramer, Exot. III, Pl. 268, fig. E. (1782.)
 Not *Sphinx vitis*, Linn. etc.
Dupo Jussieuæ, Hübner, Verz. Schm. p. 137. (1816.)
 " " Exot. Schm. Lep. III, Sphing. II. (1824.)
Philampelus Hornbeckiana, Harris, C. N. A. Sph. p. 19. (1839.)?
 " *Jussieuæ*, Walk., C. B. M. Part VIII, p. 177. (1856.)
 " *vitis*, Clem., Syn. N. Am. Sphing. p. 156. (1859.)
 " *fasciatus*, H.-S., Corr. Blatt. p. 58. (1865.)

It is very probable that *Philampelus Hornbeckiana*, Harris, Cat. N. A. Sph. p. 19, foot-note, refers to the present species. Until, however, specimens are received from St. Thomas, W. I., this fact cannot be considered certain since the description does not satisfactorily agree with the specimens from Cuba. These undoubtedly belong to the species erroneously figured by Cramer, as above cited, as the female of *P. vitis*. This has not been observed by Mr. Walker and Dr. Clemens; the latter, in copying the synonymy, has apparently changed the species as above quoted.

Dark olive green; more robust than *P. vitis*. The bands on anterior wings are mixed with white scales anteriorly; the V-shaped space on internal margin large and not enclosed on the margin. Posterior wings green; a large rose-colored space on anal angle and along internal mar-

gin; a large rectangular black spot within; two narrow median lines, the inner—black, most distinct, and joining the large black spot at the outer inferior angle, the outer—faint, glaucous, contiguous to subterminal band, bent before anal angle; a broad subterminal black band, widest at costa, narrowing to anal angle before which it is suddenly constricted; terminal space narrow, nowhere pinkish, dull ochraceous-testaceous; external margin more undulate than in *P. vitis*.

This species may be quickly distinguished from *P. vitis*, by the absence of the pink terminal space on posterior wings. I have endeavored in the description of these latter to bring out the differences which are very palpable, and which sufficiently separate the two species.

Two specimens, ♂ and ♀. Exp. ♂ 3.50, ♀ 3.80 inches. Length of body, ♂ and ♀ 1.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 217 Poey's MSS. Catalogue.

PHILAMPELUS STRENUUS, (*Chærocampa strenua*, Ménétriés, En. Corp. An. Mus. Ac. Sci. Petr. Ins. Lep. II, p. 132, Tab. 12, fig. 3, 1857) from Hayti, is allied to *P. fasciatus*, and its position is plainly between the latter and *P. lycaon*, mihi. Dr. Clemens has not noticed the Haytian species in the "Synopsis."

Philampelus Lycaon.

Sphinx Lycaon, Cram., Exot. Pl. 55, fig. A. (1779.)

Pholus Lycaon, Hüb., Exot. Schmett. (1824.)

Philampelus satellitia, Walker, C. B. M. p. 175. (1856.)

Not *Sphinx satellitia*, Linn. Drury, Harris.

Philampelus satellitia, Clem., (partim) Syn. N. A. Sp. p. 154. (1859.)

" " H-S., Corr. Blatt. p. 147. (1863.)

" " H-S., Corr. Blatt. p. 58. (1865.)

The synonymy of the present species is much embroiled. Our Northern species figured by Drury, Pl. 29, fig. 1, and by Harris, Ins. Inj. Pl. 5, fig. 2, is specifically distinct from the Cuban species, and should retain the name *satellitia*, being (vide Drury) the species intended by Linnæus. Mr. Walker has evidently called that species *Pandorus*. Hüb., which name I regard as a synonym of *P. satellitia*.

Cramer's figure of *Lycaon* differs from the Cuban specimens before me by the clouded patch on posterior wings before the apex, and by the absence of the rose-colored spot at anal angle, in both of these characters resembling *P. satellitia*. But since the shape and markings of the anterior wings are quite distinct from *P. satellitia*, and nearly correspond with the Cuban species, and moreover as I infer from descriptions that the roseate spot is inconstant, I am disposed to agree with Dr. Herrich-Schæffer l. c. that Cramer intended the West Indian species.

That, under *P. satellitia*, Mr. Walker has intended the present species, I do not doubt, while his citation of Harris is incorrect. I cannot account for Dr. Herrich-Schäffer's remark that "Walker quotes Harris and Hübner correctly under *P. Pandorus*." The mystery attending Mr. Walker's use and citation of *P. ampelophaga*, Harris, (ubi?) is inexplicable, and this remark of Dr. Herrich-Schäffer's seems to sanction the existence of such a description. Dr. Clemens has already alluded to the non-existence of any description of Dr. Harris' under the specific name of *ampelophaga*, l. c. p. 154.

If, then, we transfer the entire synonymy cited by Mr. Walker on p. 175 l. c. to *Philampelus Pandorus*, Walk., on p. 174 l. c., excepting the references of Cramer and Hübner under the specific name of *Lycaon*, we shall have the synonymy of our Northern species described by Mr. Walker as *P. Pandorus*, while the present species, described by the English Entomologist as *P. satellitia*, will receive the name I have here adopted. Dr. Clemens appears to regard these two species as identical, a conclusion which I must believe to be entirely erroneous. Dr. Herrich-Schäffer has appreciated the difference between the two species, while retaining the name of *P. satellitia* for the present species, in consonance with Mr. Walker's incorrect synonymy.

Differs from *P. satellitia*, Linn. by the somewhat slighter and narrower shape. The external margin of anterior wings is very nearly straight, not S-shaped. The subterminal lines are more distinct, nowhere angulated, regularly lunulate between the nervules; the terminal and subterminal spaces, especially on internal margin bordering the first subterminal and most distinct line, are largely mixed with whitish, somewhat nacreous scales. The sub-triangular spot on the middle of internal margin is smaller, more contrasted with the general color of the wing and preceded by slightly roseate scales.

The posterior wings show a very distinct large roseate spot on internal margin, covering anal angle; the blackish spot within internal margin is somewhat rounded, much smaller than in *P. satellitia*; the subterminal interspaceal black maculations are not obscured superiorly by a large dark green shade band, but continued distinctly to costa. The external margin is less excavate than in *P. satellitia*, compared with which the Cuban species generally is more olivaceous and paler.

One specimen wants the sub-triangular dark patch on internal margin of anterior wings.

P. satellitia never has the pink anal patch, which latter I am of opinion is of greater value as a specific character than indicated by Mr. Walker. It is constant in the four specimens before me, and perhaps

there are more species than *P. satellitia* and *P. Lyraon* to be eliminated. Its absence in Cramer's figure causes my only doubt, as to the correctness of the synonymy I have adopted. If distinct from *S. Lyraon*, Cram. the present species is, so far as I can see, undescribed until now, and may in this event be called *Philampelus posticatus*.

Four specimens, ♂ ♀ ♀. Exp. ♂ 3.85, ♀ 4.25 inches. Length of body ♂ and ♀ 2.00 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 84 Poey's MSS. Catalogue.

Philampelus labrusca.

Sphinx labrusca, Linn., Mus. Lud. Ulric 352. (1764.)

" " Fab., Sp. Ins. II, 152, 57. (1781.)

" " Cram., Exot. II, 133, Pl. 184, fig. A. (1782.)

" " Fab., Ent. Syst. III, 1, 377, 66. (1793.)

Argus labrusca, Hübner, Verz. Schm. p. 134. (1816.)

Philampelus labrusca, Walk., C. B. M. Part VIII, p. 178. (1856.)

" " Burm. Sph. Braz. p. 2. (1856.)

" " Clem., Syn. N. A. S. p. 156. (1859.)

" " H-S., Corr. Blatt. p. 58. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 4.60, ♀ 4.80 inches. Length of body ♂ ♀ 2.50 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 218 Poey's MSS. Catalogue.

PACHYLIA, Boisdual.

Pachylia Ficus.

—— Merian, Ins. Surim. Pl. 33. (1719.)

Sphinx Ficus, Linn., Syst. Nat. p. 800, No. 15. (1766.)

" " Clerck, Icon. Pl. 49, fig. 2.

" " Drury, Ill. Exot. Ins. II, 44, Pl. 26, fig. 1. (1773.)

" " Fabricius, Sp. Ins. II, 145, 16. (1781.)

" " Cramer, III, 88, Pl. 246, fig. E. (1782.)

Pholus Ficus, Hübner, Verz. Schm. 134. (1816.)

Sphinx Crameri, West., Drury. (1837.)?

Pachylia Ficus, Walker, C. B. M. VIII, 189. (1856.)

Deilephila Ficus, Burm., Sph. Braz. p. 5. (1856.)

Charocampa Crameri, Mén. En. An. Acad. Petr. Part II, p. 133. (1857.)

Pachylia Ficus, Clem., Syn. N. Am. Sph. p. 158. (1859.)

" " H-S., Corr. Blatt. p. 58. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 4.50, ♀ 5.00 inches. Length of body, ♂ 2.30, ♀ 2.40 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 289 Poey's MSS. Catalogue.

Professor Burmeister has apparently had two species before him, of which the second, to judge by his brief remark—"einer Kleineren, viel

heller gefürbten, ohne die Querbinden auf den Oberflügeln"—cannot be referred to the following species, and is possibly undescribed.

After comparing Dr. Clemens' description Jour. Acad. Nat. Sci. Phil. p. 159 (1865), with the present material, I am of opinion that the Texan specimen belongs to a distinct species, in which case the name of *Pachylia Lyncea*, proposed for it by Dr. Clemens in this event, will be retained.

Pachylia inornata.

Sphinx Ficus, Cram., IV, 216, Pl. 394, fig. D. (1782.)

Not *Sphinx Ficus*, Linn., Syst. Nat. p. 800. (1766.)

Chærocampa ficus, Mén. En. An. Acad. Petr. Part II, p. 133. (1857.)

Pachylia inornata, Clemens, Syn. N. Am. Sph. p. 159. (1859.)

No. 3 (*Pachylia*.) H-S., Corr. Blatt. p. 58. (1865.)

Allied to the foregoing, but a stouter, very dark brown, almost unicolorous species, of less expanse.

The anterior wings show a faint median costal paler shade, similarly shaped to the very distinct costo-apical patch, and enclosing the discal dot. The posterior wings are entirely dark brown, concolorous with anterior pair, with undefinedly darker marginal borders; anal angle tipped with white projecting scales.

It is possible, that Mr. Walker has united specimens of *P. inornata*, with his material under *P. ficus*, to which the present species is nearly allied, but from which I consider it perfectly distinct. Cramer's later figure. I think, refers to the present species, and not to *P. ficus*.

One male specimen. Exp. ♂, 3.80 inches. Length of body 2.00 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 91 Poey's MSS. Catalogue.

Pachylia resumens.

Pachylia resumens, Walker, C. B. M. Part VIII, p. 190. (1856.)

" " Clemens, Syn. N. Am. Sph. p. 159. (1859.)

" " H-S., Corr. Blatt. p. 58. (1865.)

Three specimens, ♂ ♂ ♀. Exp. ♂ 3.20, ♀ 3.60 inches. Length of body ♂ and ♀, 1.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 92 Poey's MSS. Catalogue.

All the abdominal segments above, are narrowly banded anteriorly with black; this is seen more plainly when the abdomen is bent, exposing in this position more of the surface of the terminal segments.

AMBULYX, Boisduval.**Ambulyx strigilis.**

- Sphinx strigilis*, Linn., Mant. I, 538.
 " " Drury, Exot. Ins. I, 62, Pl. 28, fig. 4. (1773.)
 " " Fabr., Sp. Ins. II, 144, 22. (1781.)
 " " Cram., Pap. Exot. II, 14, Pl. 106, fig. B. (1782.)
 " " Fabr. Exot. Syst. III, 1, 364, 26. (1793.)
Pholus " Hübn., Verz. Schm. p. 134. (1816.)
Ambulyx " Walker, C. B. M. Part VIII, p. 121. (1856.)
 " " Burm., Sph. Braz. p. 14. (1856.)
 " " Clemens, Syn. N. Am. Sph. p. 152. (1859.)
 " " H-S., Corr. Blatt. p. 57. (1825.)

Two specimens, ♂ and ♀. Exp. ♂ 4.00, ♀ 4.30 inches. Length of body 1.75 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 542 *Poey's MSS. Catalogue*.

Ambulyx Ganascus.

- Sphinx Ganascus*, Stoll, Pl. 35, fig. 3. (1787.)
Amphypterus Ganascus, Hübn., Verz. Schm. p. 133. (1816.)
Ambulyx Ganascus, Walk., C. B. M. Part VIII, p. 121. (1856.)
 " " Burm., Sph. Braz. p. 15. (1856.)
 " " Clem., Sph. N. Am. Sph. p. 153. (1859.)
 " " H-S., Corr. Blatt. p. 57. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 3.75 inches. Length of body 1.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 96 *Poey's MSS. Catalogue*.

This genus shows certain remote affinities to *Smerinthus*. *Amphypterus* Hübn., (*Amblypterus* Walk., Clemens) contains discordant material, while *A. Ganascus* is regarded evidently as the typical species of his genus by Hübner.

PSEUDOSPHEINX, Burmeister.**Pseudosphinx Tetrio.**

- Sphinx Tetrio*, Linn., Mant. I, 538 (Burm.)
 " " Fabr., Sp. Ins. II, 145, 27. (1781.)
 " *Hasdrubal*, Cram., Exot. III, 90, Pl. 246, fig. F. (1782.)
 " *Tetrio*, Fabr., Mant. Ins. II, 96, 30. (1787.)
 " " Ent. Syst. III, 1, 366, 32. (1793.)
Hyloicus Hasdrubal, Hübn., Verz. Schm. p. 139. (1816.)
Sphinx Asdrubal, Poey, Cent. Lepid. (1832.)
Macrosila Hasdrubal, Walker, C. B. M. Part VIII, p. 202. (1856.)
Pseudosphinx Tetrio, Burmeister, Sph. Braz. p. 8. (1856.)
Macrosila Hasdrubal, Clem., Syn. N. Am. Sph. p. 161. (1859.)
Macrosila Asdrubal, H-S., Corr. Blatt. p. 59. (1865.)

The present species is amply generically distinct from either *Amphonyx* or *Sphinx*. Prof. Burmeister has described the larva of *P.*

tetrio, and it has been beautifully figured with the pupa by Prof. Poey (Decade II). The structural features of the immature stages of this species merit attention. With regard to the synonymy I have adopted, I refer to the pamphlet of Prof. Burmeister, who has given very interesting details respecting the species. Mr. Walker cites *Sphinx Plumeriæ*, Merian, Ins. Sur. Pl. 5, as a synonym to *Sphinx Tetrio*, Fab. I have not seen the edition of Mdlle. Merian's work, which is probably that of 1771 (Hagen's Bib. Ent.), in which this is given. I quote here, from Prof. Poey's Cent. Lepid., some interesting facts respecting the larva of this species :

“La chenille est remarquable par une queue très-longue et membraneuse. Elle est très-vorace, et mange les feuilles d'une espèce de franchipanier (*Plumeria*), connu dans le pays sous le nom de *Lirio*, dont la fleur sert à faire des confitures. Elle devore aussi une partie des branches, qui sont remplies dun suc laiteux que l'on dit très corrosif, mais qui ne fait aucun mal à l'insecte. On trouve la chrysalide au pied des buissons, nullement enfouie sous terre, mais simplement recouverte par une feuille, ou cachée sous quelque morceau de brique, tels qu'on en voit dans les sucreries, autour des habitations ou l'arbre est cultivé.”

Cramer's figure of the imago is somewhat larger than the specimens sent, and, notwithstanding the customary grossness which characterizes the figures of the Dutch Entomologist, is quite recognizable.

Two specimens, ♂ and ♀. Exp. ♂ 4.00, ♀ 4.80 inches. Length of body ♂ 2.10, ♀ 2.40 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 537 Poey's MSS. Catalogue.

The elimination of the present genus by Prof. Burmeister, evinces acumen ; it is confounded by Mr. Walker and Dr. Clemens, under the generic term *Macrosila*, with dissonant material.

AMPHONYX, Poey.

Amplly distinct from *Sphinx*, Linn., the present genus, erected by Prof. Poey in 1832, has been misconceived by subsequent authors, and the two gigantic species *A. Antæus*, and *A. Duponchel*, separated by Prof. Poey, have been confounded together.

The character insisted on by Prof. Poey in his generic phrase, is the peculiar conformation of the well developed third palpal article, which extends nakedly beyond the head in the form of a corneous hooklet. Were the material sufficiently large, I should have endeavored to have given, from dissectional studies, further details respecting this genus, which I am quite confident is of independent value. Under the genus

Sphinx, I have explained fully the synonymical relation it bears to *Macrosila*, Boisd.

Amphonyx Antæus.

- Merian, Ins. Surin. Pl. 38. (1719.)
Sphinx Antæus, Drury, Ill. Exot. Ins. II, 43, Pl. 25, fig. 1. (1773.)
Sphinx Jatrophæ, Fabr., Sp. Ins. II, 143, 18. (1781.)
Sphinx Medor, Cramer, Exot. IV, 215, Pl. 394, fig. A. (1782.)
Sphinx Jatrophæ, Fabr., Ent. Syst. III, 1, 362, 22. (1793.)
Cocytius Jatrophæ, Hübner, Verz. Schm. p. 140. (1816.)
Amphonyx Antæus, Poey, Cent. Lepid. (1832.)
Macrosila Antæus, Walk., C. B. M. Part VIII, p. 200. (1856.)
Sphinx Jatrophæ, Burm., Sph. Braz. p. 9. (1856.)
Macrosila Antæus, Clem., Syn. N. Am. Sph. p. 162. (1859.)
Macrosila anthæus, H.-S., Corr. Blatt. p. 59. (1865.)

Mr. Walker, and, to judge from his remarks, also Dr. Clemens, have confounded this with the following species, from which it differs by its greater size, and in that the squamation of the anterior wings on the upper surface is of a decided brown tinge, destitute of all greenish scales whatever. The anal angle of the posterior wings is less acutely produced than in *A. duponchel*. It is possible that under *Sphinx Medor*, Cramer, pl. 394, fig. A, the following species is intended, but the inferiority of Cramer's figures prevents certainty in a matter of such very closely allied species. With regard to *Sphinx Hydaspus*, Cramer, (*S. Hydraspus*, Clem.) Cramer says: "On en trouve une variété qui n'ont point les six taches blanches sur la partie postérieure du Corps; peut-être que ces derniers sont les Mâles, car la Figure que nous donnons ici représente une Femelle." I incline to the belief, having both sexes of *A. Antæus* and *A. Duponchel* before me, that Cramer's figure refers to a third, closely allied species, which may be called AMPHONYX HYDASPES. I have seen but one figure of Cramer's under the name of *S. Medor*, and in the description no mention is made of the sex. If a second exists, as is to be inferred from what Dr. Clemens states, it has escaped my research. The description of *S. Medor* leaves it to be understood, that it is the species referred to as a variety of *S. Hydaspus* in the description of the latter in Vol. 1, p. 31, while the name of the first species with the terminal lateral white maculations, is changed to *S. Hydaspes*,* a rendering I have adopted as the more correct.

Two specimens, ♂ and ♀. Exp. ♂ 5.75, ♀ 7.50 inches. Length of body ♂ 3.00, ♀ 3.25 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 547 Poey's MSS. Catalogue.

* "Hydaspes," Humboldt, Cosmos, Vol. 2, p. 538, Bohn's Edit. 1849.

Amphonyx Duponchel.

Amphonyx Duponchel, Poey, Cent. Lepid. (1832.)

Macrosila Antæus, (partim) Walk., C. B. M. p. 200. (1856.)

" " " Clem., Syn. N. Am. Sph. p. 162. (1859.)

Not *Macrosila Antæus*, Drury, Ill. Exot. Ins. II, 43, Pl. 25, fig. 1. (1773.)

Macrosila duponchel, H-S., Corr. Blatt., p. 59. (1865.)

Differs from the foregoing in that the squamation of the anterior wings, on the upper surface, is largely greenish. Compared with *A. Antæus*, this smaller species has quite a distinctive appearance, while my examinations have afforded me but the green powdery scales which cover the anterior wings on their upper surface, as well as the head, thoracic region and abdomen, as a strong specific character, the ornamentation being remarkably similar in both species.

Two specimens, ♂ and ♀. Exp. ♂ 4.40, ♀ 5.30 inches. Length of body ♂ 2.30, ♀ 2.35 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 214 Poey's MSS. Catalogue.

Amphonyx cluentius, Poey, (*Sphinx cluentius*, Cramer), is not included in the present collection, while Dr. Gundlach appears to have sent it from Cuba to Dr. Herrich-Schæffer.

SPHINX, Linnæus.

While the European *Sphinx convolvuli*, and *Sphinx ligustri*, must be considered the more typical forms of this genus, I am aware that the material I here include under *Sphinx*, appears susceptible of distinctive generic separation. The generic term *Macrosila* Boisd., used by Mr. Walker and Dr. Clemens for certain of the species, should have the preference over *Protoparce* Burm., already mentioned in this Notice, and which contains such discordant material and seems so poorly conceived that it is better entirely neglected. The generically perfectly distinct species composing the genera *Pseudosphinx* Burm., and *Amphonyx* Poey, have, however, been confounded by both Mr. Walker and Dr. Clemens, as congeneric with *Sphinx rustica* and allies, while the species composing the two former genera, are apparently regarded by these authors as typical of the genus *Macrosila*. *Amphonyx* Poey, erected in 1832, has priority over any of Boisdual's MSS. genera made public by Mr. Walker in the Catalogue of the British Museum. and contains perfectly homogenous material, and is, moreover, more scientifically correct and better conceived than *Macrosila*. By amending *Macrosila*, and including under that generic name, the first three species of *Sphinx* here enumerated, adding *Sphinx quinquemaculata*

Haw., *Sphinx ochus** Klug, and perhaps others—which will be understood from the material I now indicate—a genus appears susceptible of erection, which would contain consonant material, very different from that thrown together under *Protoparce*, by Prof. Burmeister, and, in a less degree perhaps, from *Macrosila* of Mr. Walker and Dr. Clemens.

It seems, however, sufficient for the purposes of this Notice, in consideration also of the circumscribed material I have here studied, but to insist on the needed revision, which should be entered into by careful dissectional study, and to state, that, so far as we can judge from authors, the species (with the exceptions already noted and adopted under *Pseudosphinx* and *Amphonyx*) separated under *Macrosila* and *Protoparce*, appear to differ by an entire exaggerational development, rather than by an ultimate structural divergence, from the more typical European forms of *Sphinx*.

Sphinx rustica.

- Sphinx rustica*, Fab., Sp. Ins. II, 145, 28. (1781.)
 “ “ Cram., Pap. Pap. Exot. IV, 21, Pl. 301, fig. A. (1782.)
 “ “ Fab., Mant. Ins. II, 95, 31. (1787.)
 “ “ Fabr., Ent. Syst. III, 1, 366, 33. (1793.)
 “ *chionanthi*, Abbot & Smith, Ins. Georg. I. 67, Pl. 34. (1797.)
Acherontia chionanthi, Hübn., Verz. Schm. 139, 1495. (1816.)
Cocytius rustica, Hübn., Verz., Schm. 140, 1498. (1816.)
 “ “ Hübn., Exot. Sch. Lep. III, Pond. 2, fig. 1, 2. (1824.)
Macrosila rustica, Walk., C. B. M. Part VIII, p. 199. (1856.)
Protoparce rustica, Burm., Sph. Braz. p. 7. (1856.)
Macrosila rustica, Clem., Syn. N. Am. Sph. p. 163. (1859.)
Sphinx rustica, H.-S., Corr. Blatt, p. 59. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 4.50, ♀ 5.00 inches. Length of body, ♂ and ♀ 2.20 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 75 Poey's MSS. Catalogue.

The specimens do not differ specifically from those that I have examined from different parts of the United States.

* The synonymy of this species is as follows:

MACROSILA, emend. mihi.

Macrosila ochus.

- Sphinx ochus*, Klug., Neue Schm. Heft. 1, p. 4, Plate 3, fig. 2. (1836.)
Macrosila instita, Clem., Syn. N. Am. Sph. p. 164. (1859.)
Habitat.—Mexico, (Klug.) Honduras, (Clemens.)

Curiously enough Mr. Walker does not mention the present species, though quoting *Sphinx Typhon*, Klug (Philampelus Typhon, Walk.), figured on the same Plate. Dr. Clemens' synonym is doubtless owing to this omission in the British Museum Lists.

Sphinx carolina.

- Sphinx carolina*, Linn, Mus. Lud. Ulric, 346. (1764.)
 " " Drury, Ill. Exot. Ins. I, 52, Pl. 25, fig. 1. (1770.)
 " " Fabr., Sp. Ins. II, 144, 21. (1781.)
 " " Fabr., Mant. Ins. II, 94, 24. (1787.)
 " " Fabr., Ent. Syst. III, 1, 363, 25. (1793.)
 " " Abbot & Smith, Nat. Hist. Ins. Georg. I, 65, Pl. 33. (1797.)
Phegethontius carolina, Hübner, Verz. Schm. p. 140. (1816.)
Mandrica obscura carolina, Hübner, Exot. Sch. Sphing. III. (1824.)
Sphinx carolina, Harris, Cat. N. Am. Sph. p. 14. (1839.)
 " " Walk., C. B. M. Part VIII, p. 216. (1856.)
Macrosila carolina, Clem., Syn. N. Am. Sph. p. 165. (1859.)
Sphinx carolina, H.-S., Corr. Blatt, p. 59. (1865.)

One malespecimen. Exp. ♂, 4.10 inches. Length of body, 2.00 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 215 Poey's MSS. Catalogue.

The specimen sent does not differ specifically from material which I have examined from different parts of the United States.

Sphinx cingulata.

- Sphinx cingulata*, Linn., Mus. Lesk. 96, 193. (Walker.)
 " " Fabr., Sp. Ins. II, 151, 48. (1781.)
 " " Fabr., Mant. Ins. II, 97, 53. 1787.)
 " " Fabr., Ent. Syst. III, 1. (1793.)
 " " Abbot & Smith, Ins. Georg. I, 63, Pl. 32. (1797.)
Sphinx Druræi Donovan, Brit. Ins. XIV, pl. 469. (1813.)
Agrilus cingulatus, Hübner, Verz. Schm. 140, 1507. (1816.)
 " " Hübner, Exot. Schm. Lep. II, Sph. III. (1824.)
Sphinx cingulata, Harris, Cat. N. Am. Sph. p. (1839.)
 " " Walk., C. B. M. Part VIII, p. 215. (1856.)
 " " Burm., Sph. Braz. p. 12. (1856.)
Macrosila cingulata, Clem., Syn. N. Am. Sph. p. 164. (1859.)
Sphinx cingulata, H.-S., Corr. Blatt, p. 59. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ and ♀ 4.40 inches. Length of body, ♂ 2.20, ♀ 2.00 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 216 Poey's MSS. Catalogue.

The specimens sent do not differ specifically from those I have examined from different parts of the United States.

Sphinx Brontes. (Plate 1, fig. 5 ♂.)

- Sphinx Brontes*, Drury, Ill. Exot. Ins. II, 52, Pl. 29, fig. 3. (1770.)
 Not *Sphinx Brontes*, Boisd. Sp. Gen. Plate 15, fig. 6. (1836.)
Sphinx Brontes, H.-S., Corr. Blatt, p. 59. (1865.)

The specimens sent by Prof. Poey more nearly correspond to Drury's figure of *Sphinx Brontes*, than any species as yet known to me. I have already stated that *Sphinx Brontes* of Boisd. is not that of Drury, but is *Ceratomia repentinus* Clem., a species of common occurrence in

the United States. This latter species differs throughout from Drury's figure, and from the insect I here describe and figure, and which must approach Drury's very closely, if it be not, as I conjecture, identical with it. As to what Mr. Walker intends under *Macrosila Brontes*, I am ignorant. The small head, the rounded external margin of anterior wings, with the internal angle not exserted, the three black interspaceal dashes, are all characters, in addition to numerous other, less prominent, which quickly distinguish *C. repentinus* from Drury's figure and the insect I now describe.

Head large and prominent; eyes salient; thorax and abdomen hardly so stout as in Drury's figure, which exceeds my specimens in expanse and general size. The markings of the anterior wings coincide with Drury's figure, except that the discal spot is white, the brown subterminal space is narrower and paler. The external margin is straight, internal angle exserted. Terminally there is a series of Y-shaped blackish marks on the veins, which is characteristic of Drury's figure and very different from *C. repentinus* in this respect; the course of all the transverse lines and markings are quite alike in Drury's figure and my specimens.

The posterior wings differ from Drury's figure, but not perhaps so greatly, that the latitude we may allow for the roughness of the figure will not cover it. Before anal angle there is a cinereous patch, as in Drury's figure. Medially the wing is crossed by three propinquitous dark lines, with a paler series of scales between the first and second line. In Drury's figure these lines are not indicated, while a whitish band is drawn, undulating, across the wing. Could I but reconcile this disparity, I should be confident that I had Drury's species before me.

I have at least shown that Dr. Clemens' *C. repentinus* is a good species, and should not be confounded with Drury's *S. brontes* while I have less evidence to prove that the present is the species that Drury intended. Drury's description does not allude to the whitish band on the inferior wings, and, while doubtful on the whole, whether it be worth while to try and identify a figure of so indifferent an execution, I propose that the present species be considered as the species intended by Drury, ad interim at least, till one better suited be found, in which latter event I propose for the present species the name of *Sphinx cubensis*.

Two specimens, ♂ and ♀. Exp. ♂ 3.50, ♀ 3.60 inches. Length of body, ♂ and ♀ 1.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 86 Pory's MSS. Catalogue.

I have alluded elsewhere to what I suppose is an error on the part of Dr. Herrich-Schæffer, in referring his specimens, which I have every reason to believe are specifically identical with mine, as corresponding with Boisduval's figure, Sp. Gen. Pl. 15, fig. 6.

Sphinx afflicta, nov. sp.

Yellowish-olivaceous-cinereous, when fresh perhaps with a greenish tinge, which has however quite disappeared, if it existed, from the single specimen I describe. All the transverse lines darker, very narrow, distinct and continued. At extreme base some white scales. Four lines from the costa before the discal spot, very irregularly dentate and undulate, the third, at the sub-median nervure, joining the fourth. Discal spot white, surrounded with a dark encircling line, small, sub-reniform in shape. Beyond the median space, three propinquitous, oblique, trembled lines, run from costa to internal margin, slightly projected below the costa, the interspace between the second and third paler. These lines are interrupted with a few black scales inferiorly. A subterminal, widely and regularly undulate line, which is sub-obsolete to costa, before which it is joined by the apical streak, the latter lined above by a few white scales. An obsolete terminal line, showing a few white scales. Fringes dark, narrowly interrupted with white between the nervules.

Posterior wings pale blackish at base, beyond which they are whitish. A very intense, distinct, black demi-band, crosses the middle of the wing, furcate, sending off at the center, inwardly, a black dash, which is not continued to costa. Beyond the median black band, is a pale interspace, succeeded by a narrow, black, somewhat undulate, subterminal band, widening between the nervules to costa. Terminal space shaded with yellow-olivaceous scales. Fringes white, narrowly interrupted with olivaceous at the extremity of the veins.

Under surface olivaceous brownish. Anterior pair crossed by three, distinct, undulate, brownish lines; beyond, a subterminal brownish shade band, furcate at costa; disc covered with brownish scales, sprinkled with olivaceous. Posterior wings whitish at anal angle and along internal margin, crossed medially by two distinct black bands, of which the outer, the least distinct, joining the inner on medio-posterior nervule, dentate on the nervules. A subterminal, broad, brownish, shade band.

Head, sufficiently prominent, less so than in the foregoing species; eyes, moderately salient; antennæ, long and stout. The squamation of the head and thoracic region is unicolorous with anterior wings, without markings; on the metathorax laterally, a blackish sub-tuft.

Abdomen, paler than thorax, with lighter lateral scales surrounded with black, forming more complete maculations towards the base; beneath paler, somewhat brownish cinereous. Legs clothed with yellowish olivaceous scales; tarsi annulate; posterior tibiæ strongly spurred. Maxillæ moderate.

Resembles *Sphinx Pamphilus*, Cram. Pl. 394, fig. E.; if we allow great latitude to the figure, we may perhaps regard it as the species intended. Cramer's figure has the posterior wings nearly all black, while the general color is much as in *S. afflicta*. The course of the transverse lines on anterior wings, differs in detail.

One male specimen. Exp. 3.60 inches. Length of body, 1.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 85 Poey's MSS. Catalogue.

In the shape of the wings this species somewhat nearly resembles *S. repentinus*, while the head and eyes are larger, more salient, and the general coloration very different and peculiar. Independent of these the ornamentation, though displaying a somewhat similar pattern, is quite distinct.

The different species I have here finally alluded to, and already vaguely characterized as cinereous, roughly-scaled species of *Sphinx*, will need a generic revision; provisionally, these are better referred to the typical genus of the family.

ERINNYIS, Hübner.

Erinnyis Caicus.

Sphinx Caicus, Cram., II, p. 42, Pl. 125, fig. F. (1779.)

" " Fabr., Sp. Ins. II, 151, 49. (1781.)

Phryxus Caicus, Hübner, Verz. Schm. 137. (1816.)

Anceryx Caicus, Walk., C. B. M. VIII, p. 228. (1856.)

" " Clem., Syn. N. A. Sph. J. A. N. S. Phil. p. 177. (1859.)

" " H.-S., Corr. Bl. p. 60. (1865.)

The external margin of the anterior wings is entire, not denticulated. Cramer's figure is quite recognizable, his best in the genus perhaps, while the specific name is liable to some confusion, since there is another species called *Cacus* by the same author, Plate 46, fig. E, (*Dilophonota Cacus* Burm.) belonging to the same genus, though but distantly resembling the present species.

Two specimens, ♂ and ♀. Exp. ♂ 2.80, ♀ 3.00 inches. Length of body, ♂ and ♀, 1.70 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 95 Poey's MSS. Catalogue.

Misled by a certain correspondence, which the modified ornamentation

of the present species bears to *Deilephila livornica*,—Hübner, doubtless without autoptical acquaintance with *E. Caicus*, has regarded it as congeneric with the European species.

Erinnyis Ello.

Sphinx Ello, Linn., Syst. Nat. 800, 13. (1766.)

“ “ Drury, Ill. Exot. Ins. I, 58, pl. 27, fig. 3. (1773.)

“ “ Fab., Sp. Ins. II, 143, 17. (1781.)

“ “ Cram., Pap. Exot. IV, 24, 301, fig. D. (1782.)

Erinnyis Ello, Hübner, Verzeich. p. 139. (1816.)

Sphinx Ello, Harris, Cat. N. Am. Sph. p. 297 (17) No. 11. (1837.)

Anceryx Ello, Walk., C. B. M. VIII, p. 224. (1856.)

Dilophonota Ello, Burm., Syst. Ueb. Sph. Braz. p. 13. (1856.)

Anceryx Ello, Clem., Syn. N. Am. Sph. p. 175. (1859.)

“ “ H.-S., Corr. Bl. p. 59. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 3.00, ♀ 3.60 inches. Length of body ♂ 1.80, ♀ 2.00 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 221 Poey's MSS. Catalogue.

The female has the anterior wings evenly and entirely cinereous, all markings—except the terminal and subterminal arcuated interspaceal rows of blackish dots, which are nearly obsolete—are entirely wanting. Cramer's figure is very defective, and barely recognizable.

Erinnyis rimosa, nov. sp. (Plate 2, fig. 1, ♂.)

Anceryx scyron, Walker, C. B. M. VIII, p. 225. (1856.)?

Not *Sphinx scyron*, Cram., IV, 23, pl. 301, fig. E. (1782.)

Anceryx scyron? H.-S., Corr. Bl. p. 59. (1865.)

Anterior wings cinereous, traversed by brown, irregularly undulate, zig-zag lines. Extreme base at costa brown, with two blackish brown, short, broad, dashes, the upper immediately below the costa, the lower parallel, and immediately below the subcostal nervure. A pale cinereous space succeeds, projected nearly to the extremity of the discal cell at the middle of the wing, traversed by two faint, undulating, oblique, brown lines, limited exteriorly by a distinct, slightly undulating, brown line, which is strongly marked inferiorly to internal margin, and runs obliquely from costa to discal cell, thence inversely very obliquely to internal margin, which it joins near the base of the wing, directly below the costo-basal dashes. A second, similar brown line to the one last mentioned, runs shortly parallel, separating below the third m. nervule, thence running straightly to internal margin, thus leaving a cinereous, somewhat triangular space on internal margin. The wing, between these lines and beyond, is shaded with brown. No discal dot. An interrupted, costal, cinereous space, beyond which, three undulate, brown lines, of which the outer very faint, all very plainly marked at costa.

and running obliquely, slightly arcuated, to internal margin, the middle one most distinct, and running closely parallel to the second brown line mentioned above at internal margin, the latter line apparently joined to the inner line at about the middle of the wing.

These fine transverse lines form a figure which somewhat resembles a sprawling K. A blackish-brown, linear dash, in the interspace between the first and second median nervules at base. A cinereous shade spreads from the costa, where it is narrow, outwardly to external margin above the second m. nervule. Apical space, limited inwardly by this shade, of a brownish hue; nervules cinereous with brown spots; two dark brown, disconnected, macular shade lines, of which the ante-apical is the most distinct; fringes cinereous.

Posterior wings, bright yellow at base, with very wide blackish marginal bands, traversed by two black lines, which are more distinctly perceivable when crossing a cinereous patch at anal angle; costa very pale; fringes cinereous.

Under surface of both pair of wings rather pale brownish, suffused centrally with a warmer shade, and traversed by regularly undulate-dentate, darker shade lines, of which one is very distinct and prominent.

Head above, and collar, brownish-cinereous; thorax, cinereous, with blackish median line; abdomen, cinereous, with two dorsal, interrupted, black lines, and with broad, segmentary, black, lateral demi-bands.

The female resembles the male; the transverse lines on the anterior wings are medially more obscured by pale brownish, and more obsolete; subcostally, the apex is whitish.

Exp. ♂ 3.00 inches. Length of body 1.60 inch. Exp. ♀ 3.20 inches. Length of body 1.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 88, Poey's MSS. Catalogue.

This is impossibly to be referred to Cramer's figure E, Pl. 301, which is a caricature of any lepidopterous insect, I imagine. Dr. Herrich-Schäffer doubtfully refers this species* to Cramer's "*scyron*," while *E. rimosa* is apparently the species so determined by Mr. Walker. Until an original for Cramer's figure be found, if found it can be, *scyron* may be placed on the lists as a doubtful species, while the grossness of the figure will probably lead to the rejection of the specific name. I do not enter into the disagreements of the present species with Cramer's figure, for the reason that I can find no striking resemblance be-

* "Ich kann mich immer noch nicht überzeugen, dass Cramer's Bild diese Art darstellen soll." H-S. C. B. p. 59, 1865.

tween them to make it worth while to institute the comparison, the figure reminding one equally of any species of the genus, or indeed any "Sphinx" with yellowish secondaries. It would be an act of injustice to naturalists, were species referred as intended by earlier authors on grounds, even much more tenable, than those which authorize me to describe the present as a new species. Prof. Poey writes, respecting an unpublished MSS. name for this species: "H-S. l'a reçu de Paris sous le nom de *Mnechus*."

Erinnyis Alope.

Sphinx Alope, Drury, Vol. I, 58, pl. 27, fig. 1. (1770.)

" " Cram., 4, 23, pl. 301, fig. G. (1782.)

Erinnyis Alope, Hübn., Verz. Schm. p. 139, No. 1492. (1816.)

Anceryx Alope, Walk., C. B. M. Part VIII, p. 225. (1856.)

Dilophonota Alope, Burm., Sph. Braz. p. 13. (1856.)

Anceryx Alope, Clem., Syn. N. A. Sph. J. A. N. S. Phil. p. 177. (1859.)

" " H-S., Corr. Blatt. p. 60. (1865.)

The specimens accord sufficiently well with the citations, as to prevent any doubts of the correctness of the determination. The anterior wings, in my specimens, are generally paler than in the original figures; this is noticeable particularly in the male, in which a paler shade extends along the lower half of the wing, from before the middle of internal margin, obliquely to external margin, latter denticulated; in the female the wing is darker, more unicolorously blackish-brown.

Two specimens, ♂ and ♀. Exp. ♂ 3.60, ♀ 3.80 inches. Length of body ♂ and ♀, 2.00 inches.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 77, Poey's MSS. Catalogue.

Erinnyis Merianæ, nov. sp. (Plate 2, fig. 2. ♀.)

Anterior wings, deep blackish-brown, all the transverse lines subobsolete. A sub-triangular, subcosto-apical, cinereous patch; a distinctly defined cinereous patch at about the middle of internal margin, beyond which the region within the internal angle is shaded with dull cinereous scales, which show as pale margins to the subobsolete, transverse, subterminal, undulating blackish lines; external margin denticulate; nervules, interrupted narrowly with cinereous; at base of wing, a few cinereous hairs.

Posterior wings, dull reddish ferruginous, with a narrow, blackish, shaded border; dull cinereous at anal angle, where a black line is apparent; fringes, from anal angle along internal margin, whitish.

Under surface, dull brownish; base of both wings whitish, especially posterior pair; disc of anterior pair very distinctly covered with reddish ferruginous, hairy scales; costa at base, and towards the centre on pos-

terior wings, irrorate with cinereous scales; no median darker shade lines as in *A. ænotrus*; subterminal darker shade dentate, subobsolete.

Head, and thoracic region above, very deep brownish-black; on the sides, anteriorly, a few cinereous scales, which extend laterally on prothoracic region. Metathorax, clothed with ferruginous-cinereous scales, which extend centrally on the disc; thorax, bi-crested.

Abdomen, above, black, banded with whitish hairs which margin the segments posteriorly; dorsally, the scales are paler than laterally, forming a longitudinal shade stripe. Legs, cinereous; tibiæ, darker.

Two specimens, ♂ and ♀. Exp. ♂ 3.40, ♀ 3.10 inches. Length of body ♂ 2.00 inches, ♀ 1.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 78, Poey's MSS. Catalogue.

Nearly allied to *Erinnyis ænotrus*, Cram. sp. The anterior wings are especially very similar. The pale costo-apical shade is longer, better defined and paler; the one on internal margin is also more determinate as to shape. The posterior wings are darker ferruginous than in *E. ænotrus*, and the external margin is not so deeply excavate before anal angle. The tegulæ in the latter species are largely brownish, and the abdomen is the same shade, not black and not banded. The internal margin of the anterior wings in *E. Merianæ*, is much more undulate, and the whole insect much more robust. I do not know, from the short notice, what species is intended by Dr. Herrich-Schæffer under the name "*ænottus*," and to which a second species is said to be allied. An inspection of Cramer's figure will show that my determination of *E. ænotrus*, as a species with unbanded abdomen, is correct. Fig. G, Pl. 301, Cramer, I refer, following Mr. Walker, to *E. Alope*.

Named in memory of Maria Sibylla Merian, the pioneer Entomologist of the Eighteenth century.

Erinnyis Ænotrus. (Plate 2, fig. 3, ♀.)

Sphinx ænotrus, Cram., IV, 22, pl. 301, fig. C. (1782.)

Erinnyis ænotrus, Hüb., Verz. Schm. 139. (1816.)

Anceryx ænotrus, Walk., C. B. M. Part VIII, p. 227. (1856.)

Dilophonota ænotrus, Burm., Sph. Braz. p. 14. (1856.)

Anceryx ænotrus, Clem., Syn. N. A. Sph. p. 177. (1859.)

" *Enottus*, H-S., C. Bl, p. 59. (1865.)?

Smaller than *E. Merianæ*, more brownish, the transverse lines plainer, costal paler markings, more distinct. Abdomen, entirely brownish, slightly margined with brighter scales on the segments. Prothorax, and head above, blackish, but the thoracic region above is mostly covered with brownish hairs, concolorous with abdomen. Underneath, the wings are crossed, medially and subterminally, with dark shade lines;

on the posterior wings the median blackish shade lines are especially very distinct. On the upper surface, the anterior wings show a series of black dots in the interspaces, increasing in size towards internal angle, absent in the foregoing species; the internal margin of anterior wings is straighter, and the external margin of posterior wings more excavate before anal angle, than in *E. Merianæ*.

Two specimens, ♂ and ♀. Exp. ♂ 2.75, ♀ 3.10 inches. Length of body ♂ and ♀, 1.75 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 93, Poey's MSS. Catalogue.

***Erinnyis melancholica*, n. s.** (Plate 2, fig. 4, ♂.)

Anterior wings dark cinereous in the female, much shaded with blackish-brown in the male, traversed by many confused, inconspicuous lines. No paler patches at apex and on internal margin, are perceptible, while the transverse lines are more distinct terminally, and especially before internal angle, where they are margined with pale cinereous, showing the ordinary ornamentation of the genus in this respect; external margin denticulate.

Posterior wings, reddish-ferruginous, with rather narrow blackish borders, the nervules within, touched with blackish dots, much as in the two preceding species; external margin more excavate before anal angle than in *E. Merianæ*, much as in *E. ænotrus*, which *E. melancholica* more nearly approaches.

Under surface brownish, with ferruginous scales on the disc of anterior pair; posterior wings whitish at base, below costal region, along internal margin, reddish over the discal region. The under surface very generally resembles that of the two preceding species, while the transverse median and subterminal dark shade bands, crossing both pair of wings, are most distinct in *E. ænotrus*, in which the median, on anterior pair, is more appreciably sinuate. In *E. melancholica* the inner (median) bands are less distinct, becoming macular, especially in the female—in *E. Merianæ* the inner bands are obsolete and generally imperceptible.

Thorax, bi-crested; head, and thoracic region above, brownish-black in the male, in the female cinereous-black, paler laterally in both sexes, tegulæ with an interior cinereous stripe. Abdomen, paler brown, not banded, very similar to that of *E. ænotrus*, alike in color in both sexes. The segments are fringed with mixed paler and darker hairs, and two dorsal longitudinal shade lines are very distinct. Underneath the abdomen is paler than in either *E. Merianæ* or *E. ænotrus*.

Two specimens, ♂ and ♀. Exp. ♂ 3.00, ♀ 3.10 inches. Length of body ♂ 1.80, ♀ 1.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 222, Poey's MSS. Catalogue.

This species is very confusedly marked, and difficult to describe, except by comparison with its allies *E. Merianæ*, and *E. ænotrus*. With the latter it has a similarity of abdominal coloration and ornamentation, while the generally paler primaries, the absence of the characteristic paler patches, and differing ornamentation of the tegulæ, will separate it from either of its above mentioned allies. Somewhat as in *E. Ello*, the ♂ anterior wings show darker shades on the upper surface. I do not recognize, from the incompleteness of Dr. Herrich-Schæffer's remarks, either the present or the following species, in any of the specimens referred to, but not named, under this genus, in the pages of the *Correspondenz Blatt*. It is similar, but larger, than *Erinnyis obscura* (*Sphinx obscura* Fab.), a specimen of which I have not seen, but judging by a figure, shown me by Mr. Calverley, it is sufficiently distinct to prevent confusion, without adding further to the comparative description.

***Erinnyis pallida*, n. s.** (Plate 1, fig. 6, ♀.)

Size moderate, approaching that of *E. obscura* Fabr. sp. Entirely, very pale, cinereous. Anterior wings, entirely pale cinereous, without markings, except a darker, transverse, very deeply undulate, subterminal line, forming an arcuated series of subobsolete blackish dots on the nervules; a few darker scales along the first median nervule.

Posterior wings, pale reddish-brown, with a narrow, darker, indefinite border, becoming largely whitish before internal margin at base, and at anal angle.

Under surface of anterior pair, pale brownish; posterior pair almost entirely whitish; both pair crossed by a subterminal darker shade band, which is very indistinct. Head, and thoracic region, pale cinereous, latter darker above, without any markings on the tegulæ. Abdomen, very pale cinereous, with two longitudinal, dorsal, darker, shade lines. Under surface almost whitish; legs cinereous.

A single female specimen. Exp. ♀ 2.30 inches. Length of body 1.30 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Phil.

Number 956, Poey's MSS. Catalogue.

Approaches the following in coloration, but is a much larger, non-guttate species, with differently colored secondaries, and generally paler.

Erinnyis guttularis.*Anceryx guttularis*, Walker, C. B. M. Part VIII, p. 227. 1856.)

" " Clem. Syn. N. Am. Sph. p. 177. (1859.)

" " H-S., Corr. Blatt. p. 60. (1865.)

Two specimens, ♂ and ♀. Exp. ♂ 1.75 inch. Length of body .80 to 1.00 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 87 Poey's MSS. Catalogue.

Mr. Walker, in transcribing the generic name *Erinnyis*, from Hübner, has altered it to *Erinnys*—for what reason I know not. As is the case with *Halisidota* and *Amplypterus*, which read *Halesidota* and *Amblypterus* in the Cat. B. M., I presume it is the result of a simple error of transcription.

GENOSANDA, Walker.***Genosanda noctuiformis.****Genosanda noctuiformis*, Walk., C. B. M. Part VIII, p. 232. (1856.)

" " Clem., Syn. N. A. Sph. p. 187. (1859.)

Four specimens, ♂ ♂ ♀ ♀. Exp. ♂ and ♀, 1.40 inch. Length of body, ♂ and ♀, .70 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 835 of Poey's MSS. Catalogue.

I cannot see any affinity to *Perigonia* in this genus, composed of one of the smallest species in the family, although the color of the posterior wings recalls that genus. Their shape, and the general structure of the species, show that the position Mr. Walker has assigned to it, is approximately correct, while its position here, from want of intermediary genera, is somewhat isolated.

I give here a List of the species of Cuban *Sphingidæ*, that I have become autoptically acquainted with through the Collection of Prof. Poey. I am led to believe that the latter embraces the great majority of the species of this family found on the Island of Cuba, since it is the result of investigations carried on for a series of years. It does not however include all the known species taken on the Island, while the Numbers 119, 652, 834 and 1017, of Prof. Poey's MSS. Catalogue, remain unrepresented by specimens. In regard to the occurrence of a species of the genus *Sesia* Walk., in Cuba, Prof. Poey writes: "(No. 834.) *thisbe* Fab.,—Nous n'avons pas retrouvé cette espèce; elle a été prise à la Havanne par M. Coulanges; je l'ai vue dans la collection de M. Rippert, à Paris."

While I have given in the present article the Numbers of Prof. Poey's MSS. Catalogue, which accompanied the insects, I have not thought it necessary to give the MSS. determinations of the Professor,

in the synonymy of the different species, for the reasons that names are wanting for some of the species, and that those given are generally discordant with those that I have adopted, partly owing to the fact that but three genera are recorded as valid in the "Catalogue," viz: "*Amphonyx*," "*Sphinx*" and "*Macroglossa*," certain of the rest being regarded as sub-genera, while in no instance do I conclude this classificatory view to be admissable. I am, therefore, inclined to believe, that it would but needlessly increase the synonymy, to quote these MSS. determinations.

Respecting the Lepidoptera that have been erroneously referred to, as occurring in Cuba, principally by M. Lucas, in the work of M. Ramon de la Sagra, Prof. Poey says: "Cette Liste (Poey's MSS. Catalogue) renferme tout ce qu'il y a d'authentiquement connu sur les Lépidoptères de Cuba; tous les autres, ici non portés, doivent être exclus; surtout ceux que M. Lucas, entomologiste éminent (*damnandæ memoriæ in rebus lepidopterologicis cubanis*) a inclus dans l'ouvrage de M. de la Sagra."

This MSS. Catalogue of M. Poey, will be referred to in other articles, now preparing on the Cuban representatives of other lepidopterous Families, included in the Professor's Collection and in the possession of this Society.

In regard to the critical remarks of Dr. Herrich-Schæffer, adverse to the course pursued by certain American Entomologists who have included the West Indian lepidopterous fauna, with that of the United States, I may say a few words. The lepidopterous fauna of the Southern States is yet but little known, but judging from what material I have had access to, it seems to me that the Faunal Map by Dr. LeConte, published by the Smithsonian Institution is very approximately correct. In this, the author includes the Southern parts of Florida and Texas, in a different Zoölogical Province, from that which embraces the Atlantic States. In studying the members of the present family from Cuba, it is very evident that most of the genera have acquired a different expression, from that which they display in the Atlantic States, while but few, e. g. *Aellopos*, (vide *Macroglossum balteatum* Kirtland.) and *Deilephila*, retain their approximate signification. *Eupyrroglossum*, *Hemeroplunes*, *Callionma*, *Pachylia*, *Ambulyx*, *Amphonyx* and *Enosanda*, are unrepresented in the Atlantic States, and add much new value to the Family; while this has totally lost the Northern American genera *Lepisesia*, *Deidamia*, *Thyreus*, *Ceratomia* and *Lapara*, while I am led to believe that *Smerinthus* is but feebly repre-

sented, and loses most of its expression in the West Indies. *Darapsa** Walk., is unrepresented in Prof. Poey's Collection.

It will require a nicer critical comparison than I am able to institute here, to bring out the features lost and gained, and to strike the balance; sufficient is, perhaps, already adduced to decide, that we have entered on a new Zoölogical Province in leaving the United States, while for the purposes of convenience of reference, the fauna of countries so adjacent to our own, may be included in Zoölogical Catalogues of the North American Continent, without any impropriety.

*The genus *Darapsa* Walker, is not represented in the present Collection. According to my arrangement of the North American *Sphingidae*, it should inaugurate the Tribe *Chærocampini*. Hübner, in his "Verzeichniss," arranges it as his "Family C, Uncinati," while its affinities are plainly with *Chærocampa* and allies, with analogical resemblances to *Calliomma* in the preceding Tribe *Macroglossini*. Hübner's generic name, proposed for the two consonant species—*Chærilus* and *Myron*—has priority over Mr. Walker's, and should be retained for our genus. The species are as follows:

OTUS, Hübner.

Otus Chærilus.

- Sphinx Chærilus*, Cram., Exot. III, 91, Pl. 247, fig. A. (1782.)
Sphinx Azalea, Abbot & Smith, Ins. Ga. Vol. I, 53, Pl. 27. (1797.)
Otus chærilus, Hübner, Verz. Schm. p. 142, No. 1523. (1816.)
Chærocampa chærilus, Harris, Sill. Journ. Vol. 36, p. 302. (1839.)
Darapsa chærilus, Walker, C. B. M. Part VIII, p. 183. (1856.)
 " " Clemens, Syn. N. Am. Sph. p. 147. (1859.)

Habitat.—Atlantic District! Coll. Ent. Soc. Philad.

Otus Myron.

- Sphinx Myron*, Cram., Exot. III, 91, Pl. 247, fig. C. (1782.)
Sphinx pampinatrix, Abbot & Smith, Ins. Ga. Vol. I, p. 55, Pl. 28. (1797.)
Otus Myron, Hübner, Verz. Sch. p. 142, No. 1524. (1816.)
Otus Cnotus, Hübner, Zutr. 3rd Hund. p. 23, fig. 321-322. (1823.)
Chærocampa Pampinatrix, Harris, Sill. Journ. Vol. 36, p. 301. (1839.)
Darapsa Myron, Walker, C. B. M. Part VIII, p. 183. (1856.)
 " " Clem. Syn. N. Am. Sph. p. 147. (1859.)

Habitat.—Atlantic District! Coll. Ent. Soc. Philad.

Otus versicolor.

- Chærocampa versicolor*, Harris, Sill. Journ. Vol. 36, p. 303. (1839.)
 " " Walker, C. B. M. Part VIII, p. 131. (1856.)
Darapsa versicolor, Clemens, Syn. N. Am. Sph. p. 148. (1859.)

Habitat.—Atlantic District! Coll. Ent. Soc. Philad.

Otus Pholus.

- Sphinx Pholus*, Cram., Exot. Vol. I, 137, Pl. 87, fig. B. (1779.)
Darapsa Pholus, Walker, C. B. M. Part VIII, p. 184. (1856.)
 " " Clem., Syn. N. Am. Sph. 148. (1859.)

Habitat.—West Indies. (Cramer.)

Darapsa rhodocera Walker, for which Mr. Walker forms a Group in his genus, I am autoptically unacquainted with. It appears to me to form the type of a distinct genus, for which the generic name proposed by Mr. Walker might be retained.

LIST OF SPECIES.

AELLOPOS, Hübner.
titan,
Sphinx titan Cram.
Aello. titan Hübner.
tantalus,
Sphinx tantalus Linn.
Aello. tantalus Hübner.
EUPYRRHOGLOSSUM, Grote.
sagra,
Macroglossum sagra Poey.
Eupyrr. sagra Grote.
ENYO, Hübner.
lugubris,
Sphinx lugubris Linn.
En. lugubris Hübner.
camertus,
Sphinx camertus Cram.
En. camertus Hübner.
danum,
Sphinx danum Cram.
En. danum Hübner.
HEMEROPLANES, Hübner.
pseudothyreus Grote.
PERIGONIA, Boisd.
lusca,
Sphinx lusca Fab.
Perig. lusca Walk.
lefebvrrii,
Macroglossa lefebvrrii Lucas.
Perig. lefebvrrii H-S.
CALLIOMMA, Boisd.
lycastus,
Sphinx licastus Cram.
Calliom. lycastus Walk.
PERGESA, Walk.
thorates,
Sphinx thorates Hübner.
Perg. thorates Walk.
CHEROCAMPA, Duponch.
nechus,
Sphinx nechus Cram.
Cheroc. nechus H-S.
gundlachii, H-S.
irrorata, Grote.

porcus,
Oreus porcus Hübner.
Cheroc. porcus H-S.
robinsonii, Grote.
tersa,
Sphinx tersa Drury.
Cheroc. tersa Harris.
DEILEPHILA, Ochsen.
calverleyi, Grote.
lineata,
Sphinx lineata Fab.
Deileph. lineata Harris.
PHILAMPELUS, Harris.
vitis,
Sphinx vitis Linn.
Philam. vitis Harris.
fasciatus,
Sphinx fasciatus Sulzer.
Philam. fasciatus H-S.
***lycaon**,
Sphinx lycaon Cram.
Philam. lycaon Grote.
labruscae,
Sphinx labruscae Linn.
Philam. labruscae Walk.
PACHYLIA, Boisd.
ficus,
Sphinx ficus Linn.
Pach. ficus Walk.
inornata, Clemens.
resumens, Walker.
AMBULYX, Boisd.
strigilis,
Sphinx strigilis Linn.
Amb. strigilis Walk.
ganascus,
Sphinx ganascus Stoll.
Amb. ganascus Walk.
PSEUDOSPHEX, Burm.
tetrio,
Sphinx tetrio Linn.
Pseudos. tetrio Burm.
 * Or, *Philam. posticatus* Grote.

AMPHONYX, Poey.

antæus,
Sphinx antæus Drury.
Amph. antæus Poey.
duponchel, Poey.

SPHINX, Linn.

rustica, Cramer.
carolina, Linn.
cingulata, Linn.
**brontes*, Drury.
afflicta, Grote.

ERINNYIS, Hübner.

caicus,
Sphinx caicus Cram.
Erinn. caicus Grote.

*Or, *Sphinx cubensis* Grote.

ello,

Sphinx ello Linn.
Erinn. ello Hübner.

rimosa, Grote.

alope,
Sphinx alope Drury.
Erinn. alope Hübner.

merianæ, Grote.

cenotrus,
Sphinx cenotrus Cram.
Erinn. cenotrus Hübner.

melancholica, Grote.**pallida**, Grote.

guttularis,
Anceryx guttularis Walker.
Erinn. guttularis Grote.

CENOSANDA, Walker.**noctuliformis**, Walker.*Note to the Genus PHILAMPELUS.*

Since finishing the foregoing Notice, I have become satisfied that Hübner's figure of *Dupo jussieuæ* represents *P. vitis* Linn., Drury, Cramer, etc., and it should be accordingly transferred from *P. fasciatus* to the synonymy of *P. vitis*. Under *P. vitis*, Dr. Clemens, as I have stated, while quoting Drury's figure, which is unmistakeable, describes specimens of *P. fasciatus* Sulzer sp., a name, which, though anterior, Mr. Walker refers as a synonym to *P. jussieuæ* Hübner, probably following Hübner's course in the "Verz." Under *P. jussieuæ* (*fasciatus* Sulz.), Dr. Clemens describes specimens of *P. vitis* of Drury & Cram. (except Pl. 268, fig. E.) I finally conclude that Mr. Walker has originated this synonymy, which I continue to believe incorrect, relying on Drury's figure, while if the second species be not the *fasciatus* of Sulzer, which I have no means of definitely ascertaining from want of the work, Harris' name of *P. Hornbeckiana* next comes into consideration. I give here the synonymy of the two species.

Philampelus vitis.

- Sphinx vitis*, Linn., Syst. Nat. p. 801, No. 16. (1766.)
 " " Drury, Exot. I, 60, Pl. 28, fig. 1. (1770.)
 " " Fabricius, Sp. Ins. II, 147, 35. (1781.)
 " " Cramer, Exot. III, Pl. 267, fig. C. (1782.)
 " " Fabricius, Mant. Ins. II, 96, 39. (1787.)
 " " " Ent. Syst. III, 1, 369, 41. (1793.)
 " " Abbot & Smith, Ins. Ga. 1, 79, Pl. 40. (1792.)

- Dupo jussieuæ*, Hübner, Exot. Schm. Lep. II. Sph. III. Leg. III. (1806.)
 " " Hübner, Verz. Schm. p. 137. (1816.)
 " *vitis*, Hübner, Verz. Schm. p. 137. (1816.)?
Philampelus vitis, Harris, C. N. Am. Sph. p. 19. (1839.)
 " *jussieuæ*, Walker, C. B. M. Part VIII, p. 177. (1856.)
 " *vitis*, Burm., Sph. Braz. p. 3. (1856.)
 " *jussieuæ*, Clem., Syn. N. Am. Sph. p. 157. (1859.)
 " *vitis*, H-S., Corr. Blatt. p. 58. (1865.)

Since Dr. Herrich-Schæffer merely cites the species by name, it is not possible to know what species is intended. For the *Philampelus vitis*, of Mr. Walker and Dr. Clemens, I retain the following synonymy. It is inexplicable that Drury's figure, the earliest of *P. vitis*, could be cited in the synonymy of *P. fasciatus* m.

***Philampelus fasciatus*.**

- Sphinx fasciatus*. Sulzer, Ins. Pl. 20, fig. 1. (1776.)
 " *vitis*. Cramer, Exot. III, Pl. 208, fig. E. (1782.)
 Not *Sphinx vitis*, Linn, Drury, etc.
Philampelus Hornbeckiana, Harris, C. N. A. Sph. p. 19. (1839.)?
 " *vitis*, Walk., C. B. M. Part VIII, p. 176. (1856.)
 " *vitis*, Clem., Syn. N. Am. Sph. p. 156. (1859.)
 " *fasciatus*, H-S., Corr. Blatt. p. 58. (1865.)

In addition to my observations on *P. lycaon*, which I feel satisfied are correct, I would state that it is possible that Cramer's figure was taken from an individual, which had the hind wings of a specimen of *P. satellitia*, substituted in place of its own; similar practices have been before this discovered. chargeable to the unscrupulousness of the Early Collectors. The pink anal patch is a specific character of *P. lycaon* Hübner. Grote, which *P. satellitia* Linn, Drury, Harris, (*Pandorus* Hübner) never shares.

ERRATA ET CORRIGENDA.

Page 34, line 4, dele "Ægeriidæ."

- " 34, line 4, for "the" read "a more."
- " 34, line 5, (foot note,) for "d'indequer" read "d'indiquer."
- " 34, line 6, (foot note,) for "liu" read "lui."
- " 40, line 8, for "the" read "that."
- " 41, line 6, for "Verz" read "Ueb."
- " 44, line 11, for "Zuts." read "Zutr."
- " 45, line 6, for "Herrich-Shæffer" read "Herrich-Schæffer."
- " 53, line 28, for "Darapsa" read "Otus."
- " 56, line 2, (foot note,) for "gehoren" read "gehören."
- " 63, line 4, for "1865" read "1859."

The date of Cramer's 2nd Vol. should read everywhere 1779.

Monograph of the PHILANTHIDÆ of North America.

BY E. T. CRESSON.

(Communicated July 10th, 1865.)

This extensive family is represented by some of the most beautiful species in the tribe of fossorial Hymenoptera. The genera are but three in number—*Philanthus*, *Cerceris* and *Eucerceris*, nov. gen.; the two former are numerous in species, and have a wide distribution, being found in Europe, Asia, Africa, Australia, and North and South America. The last named genus seems to be confined to North America, and is closely allied to *Cerceris*, though quite distinct by the different neuration of the anterior wings. The only two species heretofore described, and belonging to this genus, were referred by Say to *Philanthus*; his specimens being males, he doubtless placed them in that genus because of the neuration being more similar than to that of *Cerceris*, while at the same time he was convinced that they should form “a distinct subgenus.”

Little or nothing is as yet known of the economy of our species of this family, but they have doubtless much the same habits as those of Europe, where the species of *Philanthus* seem to prey almost exclusively upon *Andrena*, *Halictus* and *Apis mellifica*, while those of *Cerceris* select different species of Curculionidæ, and other coleopterous insects, as well as *Halicti*; these are stored up in their cells for the nourishment of their young.

Genus PHILANTHUS, Fabr.

Head large, wider than the thorax, suborbicular, sometimes subquadrate; eyes lateral, ovate, slightly emarginate within; ocelli in a triangle on the vertex; antennæ subclavate, inserted above the clypeus in the middle of the face, not approximated; clypeus trilobate, the lateral lobes of ♂ with an appressed tuft of long silky pubescence; mandibles acute at their apex. *Thorax* ovate, the collar transverse, the metathorax obtusely rounded, sometimes truncated behind. *Wings*: the anterior wing (Fig. 1) with one marginal and three submarginal cells; the

Fig. 1. marginal cell narrow, elongate, more or less pointed at tip; the first submarginal cell about as long as the two following, the second about half as long as the first and narrowed towards the marginal, receiving the first recurrent nervure about the middle or a little beyond; third submarginal larger than the second, narrowed nearly half its width towards the marginal,



and receiving the second recurrent nervure either about the middle or very near its base. *Legs* stout and more or less spinose, the anterior tarsi ciliated exteriorly. *Abdomen* oblong-ovate, the margins of the segments slightly depressed.

♂.—*Body finely punctured.*

1. *Philanthus gloriosus*, n. sp.

Large, black; face, tegulæ, two transverse spots on basal segment of abdomen, and broad continuous bands on remaining segments, yellow; cheeks, collar, most of legs, basal segment of abdomen, and bands on venter, dull ferruginous or honey-yellow; wings dull honey-yellow.

Female.—Black, shining, clothed with short, fine, fuscous and ochraceous pubescence; head large, minutely punctured, clothed with yellowish pubescence, long on the cheeks; sides of the face, a large subquadrate spot between the antennæ, clypeus and mandibles except tips, yellow; a large, dull ferruginous spot occupies most of the cheek, extending upon the occiput where the two are almost confluent; antennæ black or piceous, the scape, except a black line above, and the two basal joints of the flagellum beneath, yellow. Thorax shining above, closely and more strongly punctured than the head, the punctures more sparse on the disk of the mesothorax, which has a very short pale fuscous pubescence and a rather deep, longitudinal depression in front; pectus, pleura and metathorax densely clothed with a pale ochraceous sericeous pubescence; prothorax either entirely ferruginous above, or with a yellowish-ferruginous line on its posterior margin; postscutellum yellow, or ferruginous with a yellow spot on each side; a spot on the tubercles and a transverse spot immediately behind them and beneath the superior wing, yellowish; metathorax closely punctured, with a broad, shallow depression on the disk; tegulæ yellow. Wings subhyaline, tinged with dull honey-yellow, the apical margins narrowly fuscous or fuliginous, with a slight violaceous reflection; nervures honey-yellow. Legs honey-yellow; the four anterior tibiæ and tarsi yellow, the posterior pair tinged with yellow. Abdomen elongate-ovate, the basal segment strongly contracted and subglobose; finely, distinctly and rather sparsely punctured, shining, with a short, sparse, yellowish pubescence, more obvious on the basal segment, which is convex, obscure ferruginous, with more or less black at base and apex, and with a transverse yellow spot on each lateral middle; the second, third, fourth and fifth segments with a broad, continuous yellow band at the apex, that on the second covering the whole of the segment, excepting a large, elongate, black or ferruginous mark on the middle, and proceeding from the base; the bands on the third, fourth and fifth seg-

ments are more or less narrowed on the anterior middle, and slightly indentated on each side anteriorly; sixth segment with a large triangular yellow mark, covering nearly the entire segment above; venter piceous, shining, the four basal segments each with a broad, continuous yellow band. Length 8—9½ lines; expanse of wings 14—16 lines.

Hab.—Colorado Territory, (B. D. Walsh, Esq.) Coll. Entom. Soc. Philad.

Two ♀ specimens; ♂ unknown. This is the largest and finest species yet discovered in this country, and is readily distinguished by the broad yellow fasciæ on the second and following segments of the abdomen, that on the second with a deep longitudinal indentation on the basal middle. The Society is indebted to the kindness of Mr. Walsh for this fine addition to its collection.

2. *Philanthus frigidus*, Smith.

Philanthus frigidus, Smith, Brit. Mus. Cat. Hym. iv. p. 475, ♂.

Black; three broad stripes on face, interrupted line on collar, spot on tegulæ, another on postscutellum, most of tibiæ and tarsi, spot on each side of first abdominal segment, and narrow fasciæ on remaining segments, yellow; wings subhyaline.

Female.—Black, somewhat shining, very closely and finely punctured, thinly clothed with a pale pubescence; head transversely compressed; face flat, with a broad longitudinal yellow stripe on each side, and another down the middle, the former does not extend higher up than the insertion of the antennæ, and ends beneath in a transverse spot on the extreme side of the clypeus; the middle stripe is composed of a rounded spot beneath the insertion of the antennæ, and a broad, somewhat uneven elongate mark down the middle of the clypeus; a dot on the posterior orbits, and a spot on base of mandibles, also yellow; antennæ subfiliform, slightly thickened towards the tip, the scape with a yellow dot at the apex within. Thorax: dorsal front of mesothorax uneven with longitudinal impressions; an interrupted line on the collar, a dot on tubercles, sometimes wanting, and a transverse spot or dot on postscutellum, yellow; scutellum shining and more sparsely punctured than the rest of the thorax; metathorax very densely and finely sculptured, thickly clothed with a long pale pubescence, the tip of the enclosed basal space is shining and transversely pinched; tegulæ piceous, with a yellow spot in front. Wings subhyaline, tinged with fusco-ferruginous, especially towards the tips, which have a subviolaceous reflection; nervures fusco-ferruginous. Legs black or piceous; exterior tips of the anterior trochanters, spot on posterior coxæ, tips of all the femora, the tibiæ, and base of tarsi, yellow; a spot on the tibiæ at tip

beneath and remainder of the tarsi, fuscous. Abdomen ovate, subdepressed, regularly narrowed towards the base, the basal segment only slightly constricted at tip; minutely punctured, the apical segments more distinctly so; first segment with a rounded, sometimes transverse, uneven, yellow spot on each side near the tip; the second and three following segments each with a narrow, subapical, yellow fascia, that on the second segment narrowed in the middle where it is more or less interrupted; that on the third segment is also sometimes slightly interrupted; those on the fourth and fifth segments are continuous and sometimes a little wavy; apical segment depressed, rugulose, rounded at tip; venter smooth, shining, black or piceous-black, immaculate, sparsely punctured. Length $5\frac{1}{4}$ — $6\frac{1}{4}$ lines; expanse of wings 10—11½ lines.

Male.—Smaller and narrower than the female; the head is not transversely compressed; the stripes on the face are broader, the middle one tapering towards the insertion of the antennæ between which is a yellow dot; the posterior orbit has a short yellow line; the antennæ are longer and more slender at base, the scape is yellow in front, and the flagellum rufo-testaceous beneath towards the base; the line on the collar is uninterrupted, the pleura has a transverse lunate spot beneath the anterior wing, the scutellum has a broad transverse yellow band at base, and the postscutellum has a transverse spot of the same color; the spot on the tegulæ is larger; the wings are clearer and iridescent; the anterior coxæ have a large yellow spot beneath, and the posterior pair are yellow at tips, with a spot on their trochanters beneath; all the femora have a more or less dilated yellow line beneath, while the tibiæ and tarsi are more yellowish than in the female; the abdomen is narrower and convex, not at all depressed; the ornamentation is much the same, only the band on the second segment is not broader than those on the following segments; the sixth segment has a transverse spot on each side; the venter has a yellow fascia on each of the second, third and fourth segments, the first interrupted in the middle. Length 5 lines; expanse of wings 8 lines.

Hab.—"Nova Scotia," (Smith); Canada West, (Mr. B. Billings, Jr.) Coll. Ent. Soc. Philad.

Three ♀, one ♂, specimens. A female specimen, collected in Colorado Territory by Mr. James Ridings, differs from those from Canada as follows: the three yellow stripes on the face are irregular and broken, the spot beneath the antennæ is much reduced, while that on the middle of the clypeus is larger, rounded above and emarginated beneath;

the posterior orbits have a line as in the male; the front of mesothorax is more uneven, the postscutellum has a mere dot on its middle, and the tip of the enclosed basal space of the metathorax is not shining; the tegulæ are almost entirely yellow; the wings are uniformly tinged with dull honey-yellow; the femora have more yellow at tips, especially on the posterior pair, which have nearly the apical half yellow; the spots and bands on the abdomen, although similarly shaped, are larger and nearly twice as broad; the venter has an interrupted yellow fascia on the second and third segments, suddenly dilated at the sides, and a small yellow spot on each side of the two following segments. Length $6\frac{1}{2}$ lines.

3. *Philanthus Sanbornii*, n. sp.

Black; face, base of antennæ, collar, line beneath tegulæ, postscutellum, spot on tegulæ, most of legs, irregular spot on each side of first and second abdominal segments, very large and subovate on the second, and narrow emarginate fasciæ on the three following segments, yellow; wings fusco-hyaline.

Female.—Black, shining, finely and rather indistinctly punctured, clothed with a short, pale pubescence, longer and more dense on the cheeks; head broader than the thorax; sides of the face narrowed and extending a little above the insertion of the antennæ, a spot between the antennæ, sometimes transverse, sometimes rounded, the clypeus, mandibles except tips, and a small spot on the side of the cheek, yellow; the suture on each side of the large middle lobe of the clypeus is more or less broadly black; antennæ rather stout, the third joint clavate, much attenuated towards the base; scape yellow, with a black spot behind, the flagellum black, rufo-testaceous beneath towards the base, the small first joint with a yellow dot in front. Thorax with a deep channel on the front of the mesothorax; a line on the collar, more or less interrupted in the middle, a transverse line beneath the anterior wing, a transverse line on the postscutellum, rarely wanting, and a spot on the tegulæ anteriorly, yellow; metathorax finely punctured, with a deep longitudinal channel on dorsal middle. Wings rather strongly and uniformly tinged with yellowish-fuscous, and with a slight violaceous reflection; nervures fuscous. Legs yellow; coxæ, trochanters, the anterior femora above, and the two posterior pairs except tips, black or brown, the latter sometimes pale fuscous, shading into testaceous at tips; tarsi more or less dusky throughout. Abdomen rather broad-ovate, subconvex, very closely and finely punctured; apical incisures of the first and second segments deeply impressed; on each side of the first segment a yellow spot or a transverse irregular line; second segment with a large, transverse, subovate yellow spot on each side, occupying

the whole length of the segment; third, fourth and fifth segments each with a narrow subapical yellow band, broader on the sides, more or less deeply emarginated on each side anteriorly, and very slightly interrupted in the middle; apical segment depressed, rounded at tip, smooth and shining, without apparent punctures; venter piceous-black, shining, immaculate. Length 7 lines; expanse of wings 11 lines.

Male.—Resembles the female in general shape and markings; the head is not so broad, scarcely wider than the thorax, and clothed with black pubescence; the eyes are more approximated on the vertex and the front not so depressed; the clypeus has a triangular black mark on the middle anteriorly, and together with the longitudinal mark on the side of the face and the spot between the antennæ, assumes a shape not unlike a W; the spot between the antennæ is sometimes confluent with a large suborbicular spot on the vertex; the spot on each side of the cheek is situated rather lower down than in the female; the appressed lateral tuft of the clypeus is fulvous; the mandibles are entirely black, polished, simple, and acute at tip; the flagellum of the antennæ is gradually narrowed towards the base, and the second joint is cylindrical and not clavate; the scape and four or five basal joints of the flagellum are yellow, black behind. Thorax, wings and legs are same as in the female, except that the tegulæ are almost entirely yellow, and the femora are more blackish. Abdomen narrower, the markings are much the same, except that the first segment is generally immaculate, the large maculæ on the second are more transverse and approximated on the middle of the segment, while the fasciæ on the three following segments are sometimes entire, and sometimes much narrowed and interrupted into narrow lines, by the emarginations cutting through; the sixth segment has two small spots on the middle, sometimes obsolete or wanting; the whole abdomen is clothed with a black pubescence, short and sparse above, long and rather dense beneath, especially towards the tip. Length $4\frac{1}{2}$ — $6\frac{1}{2}$ lines; expanse of wings 9—11 lines.

Hab.—Massachusetts, (Mr. James Ridings and Mr. F. Stratton.) Coll. Ent. Soc. Philad.

Six ♀, nineteen ♂ specimens. The female of this species is shaped somewhat like that of *P. frigidus*, Smith, but the markings are different, and may be at once distinguished by the large ovate macula on each side of the second abdominal segment.

It gives me pleasure to dedicate this fine species to my much esteemed friend, Mr. Francis G. Sanborn, of Boston, Mass., a zealous and valuable Entomologist.

4. *Philanthus laticinctus*, n. sp.

Black; face silvery; clypeus, collar, tubercles, scutellums, tegulae, two spots on metathorax, legs in part, and broad bands on abdomen, lemon-yellow; wings hyaline.

Male.—Black, opaque, very densely and finely punctured, thinly clothed with a silvery-cinereous pubescence; head large, wider than the thorax; face and cheeks rather densely clothed with a fine, appressed silvery pubescence; clypeus, and mandibles except tips, yellow; antennae rather long, slender, subfiliform, the flagellum a little attenuated at base, black above, brown beneath, paler at base, the scape yellow beneath. Thorax: an uninterrupted line on the collar, extending down irregularly on each side, the tubercles, confluent with a large spot behind and just beneath the anterior wing, scutellum and a dot at each basal corner, postscutellum, a large oblong-ovate spot on each side of metathorax, and the tegulae, lemon-yellow; metathorax with a rather deep, longitudinal channel on the dorsal middle. Wings pure hyaline, iridescent; nervures pale fuscous. Legs: coxae and trochanters black or piceous-black; femora dull honey-yellow, blackish at base and yellow at tips and beneath; tibiae yellow above, honey-yellow beneath; tarsi honey-yellow. Abdomen elongate-ovate, segments contracted at base, especially the anterior ones; the five basal segments each with a broad, continuous, lemon-yellow band, leaving the basal and apical margins narrowly black; the two apical segments black, immaculate; venter with a yellow spot on each side of the second segment, and a more or less interrupted yellow fascia on each of the third and fourth segments. Length 1—4½ lines; expanse of wings 6½—7 lines.

Hab.—Rocky Mountains, Colorado Territory, (Ridings.) Coll. Ent. Soc. Philad.

Two ♂ specimens; ♀ unknown. A pretty and distinct little species, easily recognized by the broad, continuous and uniform bands on the abdomen.

5. *Philanthus albopilosus*, n. sp.

Black, thickly clothed with white pubescence; face, tibiae and tarsi, tegulae, broad bands on three basal segments of abdomen and spots on the remaining segments, yellow; wings pure hyaline.

Male.—Black, shining, indistinctly punctured, head, thorax, legs and base of abdomen thickly clothed with a rather long, fine, white pubescence, a little silvery in certain lights; head wider than the thorax; the entire face, up to the ocelli, and the clypeus, pale yellow, sometimes slightly tinged with honey-yellow; mandibles black; the front slightly raised; antennae black, gradually thickened towards the apex, the second joint of the flagellum cylindrical; the scape beneath.

and the second, third and fourth joints of the flagellum beneath, pale yellow, the latter fulvous beneath towards the tips. Thorax sometimes entirely black, sometimes the collar has a very narrow, subinterrupted yellowish line, the tubercles a spot, and the scutellum two approximated dots on its middle, but the latter are apparent in one specimen only; the scutellum is transversely convex, with a slight depression on its disk, and the metathorax has a well impressed longitudinal channel; tegulæ pale yellowish. Wings purely hyaline, slightly iridescent; nervures pale honey-yellow. Legs slender, black; extreme tips of the femora and the tibiæ, pale yellow; tibiæ beneath and the tarsi entirely, dusky, the latter long and slender. Abdomen ovate, subacuminate at tip, the basal segment as broad as the second; the segments rather deeply incised at base; first, second and third segments each with a broad, continuous, pale yellow fascia, more or less emarginated on each side posteriorly; fourth, fifth and sixth segments each with a central transverse yellowish spot, the fourth sometimes with a small spot or dot on each side; apical segment black, immaculate, subacute at tip; beneath black, immaculate, smooth and shining. Length $4\frac{1}{2}$ lines; expanse of wings $8\frac{1}{2}$ lines.

Hab.—Illinois, (Dr. Samuel Lewis.) Coll. Ent. Soc. Philad.

Five ♂ specimens; ♀ unknown. This curious little species may be easily recognized by the head and thorax being thickly clothed with a beautiful silvery-white pubescence.

6. *Philanthus lepidus*, n. sp.

Black, polished; face, large mark between antennæ, line on collar, tubercles, tegulæ, postscutellum, tibiæ and tarsi, spot on each side of first segment of abdomen, and fasciæ on the remaining segments, broad on the second, bright yellow; wings pale yellowish-fuscous.

Male.—Black, polished, impunctured; head large, transversely-ovate; the front prominent, very minutely punctured, with a central longitudinal depression beneath the ocelli; sides of the face, clypeus, spot on base of mandibles, and a dot behind the eyes, bright lemon-yellow; a triangular mark between the antennæ, confluent with a large quadrate mark above, bright deeper yellow; the appressed lateral tuft of the clypeus is silky-ochraceous; antennæ gradually but much thickened towards the tips, slender at base, black, the scape entirely, and the four basal joints of the flagellum beneath, yellow. Thorax polished, without punctures; mesothorax with a well-impressed central line, and an indistinct abbreviated one over the tegulæ; a line over the collar, tubercles and a transverse spot behind, and the postscutellum, bright lemon-yellow; metathorax short, rounded behind, smooth and polished,

with a deep elongate fovea on the disk; tegulæ lemon-yellow. Wings subhyaline, the apical half stained with yellowish-fuscons; nervures and stigma fulvous. Legs slender, shining black; apical half of the anterior femora, tips of the four posterior femora, and all the tibiæ and tarsi, bright lemon-yellow; tips of the tarsi slightly dusky. Abdomen ovate, highly polished, impunctured, except at tip; first and second segments rather deeply incised at tip, the former convex and rounded in front, with an oblique, ovate, lemon-yellow spot on each side towards the tip; second segment with a broad, basal lemon-yellow band, a little oblique on the sides, and slightly interrupted in the middle; third, fourth and fifth segments each with a narrow, apical, lemon-yellow fascia, slightly wavy on the sides; sixth and apical segments very minutely punctured and pubescent, the former with a transverse yellowish spot on the middle and another on each side; apical segment immaculate, subtruncate at tip; venter polished, black, the apical middle of the second and following segments obscurely brownish, with a yellow dot on each extreme side. Length $4\frac{1}{2}$ lines; expanse of wings $7\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

One ♂ specimen; ♀ unknown. A lovely species, remarkable for the smooth, polished, *impunctured* body, and the bright lemon-yellow markings.

7. *Philanthus pulchellus*, n. sp.

Black; face, spot above antennæ, collar, tubercles, tegulæ, scutellums, tibiæ and tarsi, and emarginated bands on abdomen, pale yellow; wings hyaline.

Male.—Black, shining, finely and sparsely punctured, slightly pubescent; head transversely ovate; sides of the face, much narrowed on each side of the insertion of the antennæ, clypeus, spot between antennæ, a rounded, triangular, or rhomboidal spot on the front just above the antennæ, a spot on base of mandibles, and a dot behind the eyes, more or less pale yellow, sometimes almost white; antennæ black, slightly thickened towards the apex, the second, third, fourth and sometimes the fifth joints of the flagellum are yellow in front and the apical joints have each a testaceous spot or stain; in some specimens the spot between the antennæ and the larger one above, are more or less confluent, and the spot behind the eyes is enlarged; sometimes the tip only of the second, and the third joint of the flagellum are yellowish. Thorax sparsely punctured; mesothorax with a deep central channel; a band on the prothorax, slightly interrupted in the middle, the tubercles and a spot behind, a little lower down, a transverse spot on the scutellum, sometimes interrupted in the middle, and forming two

spots, and in one specimen entirely wanting, a transverse line on post-scutellum, and the tegulæ, pale-yellowish, sometimes almost white; the scutellum has a more or less deep channel down the middle, and in the specimen with immaculate scutellum, the channel is very deep; meta-thorax sparsely punctured, with a deep, elongate, central fovea. Wings hyaline; nervures pale honey-yellow. Legs yellow; the coxæ, trochanters, and the femora, except tips, black. Abdomen oblong-ovate, sparsely punctured, shining; first segment convex, rounded in front and contracted posteriorly; second segment also slightly contracted at base; first segment with a median pale yellow band, more or less deeply emarginate on each side posteriorly, and occasionally interrupted in the middle; the remaining segments each with a pale yellow apical fascia, that on the second segment broadest, deeply and squarely emarginated on each side posteriorly; in one specimen this band is entire with a minute black speck on each side of the middle; the fasciæ on third and following segments are obtusely, sometimes squarely, emarginated on each side anteriorly; apical segment immaculate, subtruncate or slightly emarginate at tip; beneath smooth, shining, immaculate. Length 4 lines; expanse of wings 7 lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Six ♂ specimens; ♀ unknown. A beautiful little insect, closely related to the three following species in the markings of the abdomen.

8. *Philanthus politus*, Say.

Philanthus politus, Say, Long's 2nd Exped. ii, p. 343; Amer. Ent. plate 49.

Anthophilus politus, Dahlb., Hym. Europ. i, p. 190.

Black; face, line on collar, sometimes interrupted, two spots beneath the wings, line on postscutellum, spot on each side of first segment of abdomen, and emarginated bands on the remaining segments, white; tibiæ yellow; wings tinged with pale yellowish-fuscous.

Female.—Black, polished, with deep scattered punctures; vertex slightly prominent, densely and very minutely sculptured; sides of the face, suddenly narrowed on each side of the insertion of the antennæ, clypeus, a transverse spot between the antennæ, and a dot above, between it and the ocelli, line on the mandibles, and a spot or line behind the eyes, white; antennæ black, thickened, the flagellum narrowed at base, fulvous beneath, the scape white beneath. Thorax with scattered, rather fine punctures; two transverse spots or an interrupted line on collar, tubercles and a spot behind, line on postscutellum, and the tegulæ, white; metathorax with a deep fovea on the dorsal middle. Wings stained with pale fulvo-fuscous, hyaline at base; nervures pale honey-

yellow. Legs black; extreme tips of the femora and the tibiæ exteriorly, pale yellow; the latter black beneath; the four anterior tarsi honey-yellow; the posterior pair blackish. Abdomen ovate, highly polished, with scattered deep punctures; basal segment convex, rounded at base and constricted at tip, with a white rounded or transverse spot on each side; second segment with a transverse white line on the apical middle, and a subquadrate spot on each side, sometimes the middle line is wanting; third, fourth and fifth segments have each a narrow, apical, white fascia, deeply emarginated on each side anteriorly; apical segment depressed, rounded at tip with two indistinct whitish spots at base; in some specimens the second segment has a continuous fascia, very deeply and squarely emarginated on each side posteriorly; venter smooth and polished, immaculate. Length $4\frac{1}{2}$ lines; expanse of wings $7\frac{1}{2}$ lines.

Hab.—"Pennsylvania," (Say, Smith); Massachusetts, (Ridings); Illinois, (Dr. Lewis and Mr. Walsh); Rocky Mountains, Colorado Territory, (Ridings). Coll. Ent. Soc. Philad.

Thirteen ♀ specimens; ♂ unknown, unless it be the *P. dubius* described below.

9. *Philanthus similimus*, n. sp.

Black, pubescent; face, line on collar, two spots on scutellum, line on post-scutellum, tibiæ exteriorly, and fasciæ on abdomen, sometimes more or less interrupted and emarginated, whitish; wings hyaline.

Female.—Black, shining, head and thorax rather thickly clothed with a short, fine, whitish pubescence, finely and sparsely punctured; head transversely subcompressed; sides of the face, extending a little above the slight emargination of the eyes, a longitudinal line above the insertion of each antenna, clypeus except a large black spot on each lateral lobe, a line on the mandibles, and a spot behind the eyes, all obscure whitish; antennæ gradually thickened towards the tips, black above, the scape whitish beneath, and the flagellum, except basal joint, fulvous beneath. Thorax: line on the collar, two subobsolete longitudinal lines on the mesothorax, a spot beneath the anterior wing, two spots on scutellum, a line on postscutellum, and the tegulæ, obscure whitish; in one specimen the collar has only a short line on each side above, the mesothorax and scutellum are immaculate, and the postscutellum has only a spot on each side; the markings are all indistinct; mesothorax closely punctured, abrupt on the sides and behind, the disk with a shallow longitudinal fovea. Wings hyaline, iridescent, slightly tinged with pale fuscous towards the tip; nervures pale honey-yellow. Legs slightly pubescent, black; apical half of the anterior femora, tips

of the two posterior pairs, and the tibiæ, except a blackish line beneath, very pale yellowish-white; tarsi more or less dusky. Abdomen ovate, shining, slightly pubescent, especially at base, with rather deep, scattered punctures; first segment convex, rounded at base and contracted at tip, the other segments rather deeply incised at base; each segment with an apical, obscure whitish fascia, bi-undulate on the first segment, with a deep emargination on each side posteriorly; the other fasciæ are clouded with dusky posteriorly; in one specimen the markings are much less developed, the basal segment has only a small spot on each side, the second and third segments have the fasciæ deeply emarginated on each side posteriorly, while those on the two following segments are interrupted into three spots on each segment by the emarginations cutting through; apical segment with a broad continuous band at base, the segment depressed, obtusely rounded or subtruncate at tip; beneath shining, immaculate. Length $4\frac{1}{2}$ lines; expanse of wings 8 lines.

Hab.—Illinois, (Dr. Samuel Lewis.) Coll. Ent. Soc. Philad.

Two ♀ specimens; ♂ unknown. Very similar to *P. politus* Say, but the head is differently marked, and the wings are clearer.

10. *Philanthus dubius*, n. sp?

Black; sides of face, clypeus except a cuneiform mark on disk, a spot between antennæ sometimes connected with a large mark above, collar, tubercles, post-scutellum, tibiæ and tarsi, spot on each side of first abdominal segment, and narrow emarginated bands on remaining segments, yellow; wings stained with pale fuscous, clearer at base.

Male.—Shaped and sculptured like *P. politus* Say. Black, shining, sparsely punctured, and with a thin short white pubescence, more obvious on the face and sides of metathorax; sides of the face, clypeus except a cuneiform mark on the disk, spot between the antennæ, sometimes connected with a larger, rounded, transverse or broad sublanceolate mark on the middle of the vertex, a spot or line behind the eyes, a dot on each side just behind the ocelli, and a line on mandibles, all yellow; antennæ black, the scape within and a spot on the second, third and fourth joints of the flagellum within, yellowish, the latter fulvous beneath. Thorax: slightly interrupted line on the collar, tubercles and a spot behind, tegulæ, and a line on postscutellum, yellow. Wings stained with pale fulvo-fuscous, the basal half hyaline; nervures pale honey-yellow. Legs colored as in *P. politus*, except that the tarsi are paler. Abdomen shaped, sculptured and marked similar to that of *P. politus*, but is more pubescent, especially at the apex; the two apical segments are immaculate, the last obtuse; beneath piceous-black, immaculate. Length $3\frac{1}{2}$ — $4\frac{1}{2}$ lines; expanse of wings $6\frac{1}{2}$ — $7\frac{1}{2}$ lines.

Hab.—New York, (Ashton); Illinois, (Dr. Lewis and Mr. Walsh.)
Coll. Ent. Soc. Philad.

Eleven ♂ specimens. This is probably the ♂ of *P. politus* Say, although I am by no means certain that it is; the sculpture and markings are very similar, the greatest difference being in the color of the markings, which are yellow in this species, and milk-white in *politus*.

11. *Philanthus bilunatus*, n. sp.

Black, polished; sides of the face, clypeus, spot on vertex, collar, tubercles, postscutellum, tibiae and tarsi, two lunate spots on second segment of abdomen, and narrow emarginated fasciae on three following segments, lemon-yellow; wings dusky at tips; abdomen narrowed and constricted at base.

Male.—Black, polished, impunctured, except on the vertex, which is closely and very minutely punctured; head large, transversely ovate; sides of the face, clypeus, small transverse line just above the clypeus, and a large suborbicular spot on the middle of the front, yellow; mandibles entirely black; antennae black, the scape within and a spot on the second and third joints of the flagellum, yellow. Thorax impunctured, very thinly pubescent; slightly interrupted line on the collar, spot beneath the anterior wing, line on postscutellum, and the tegulae, yellow; metathorax convex, rounded behind, with a deep elongate fovea on the disk. Wings hyaline at base, the apical half stained with pale fulvo-fuscous; nervures pale honey-yellow. Legs black; extreme tips of the femora, and the tibiae and tarsi entirely, yellow; posterior tarsi dusky at tips. Abdomen ovate, much narrowed and constricted at base, highly polished, impunctured; basal segment convex, rounded at base, sometimes with a yellow dot or line on each side of the middle; second segment with a large, transverse, lunate, yellow mark on each side, sometimes almost confluent on the middle; the three following segments each with a narrow, apical yellow fascia, more or less deeply emarginate on each side anteriorly; two apical segments slightly pubescent, immaculate, the last subtruncate at tip; venter polished, immaculate. Length $4\frac{1}{2}$ lines; expanse of wings $7\frac{1}{2}$ lines.

Hab.—Massachusetts (Stratton); Illinois (Walsh). Coll. Ent. Soc. Philad.

Five ♂ specimens, ♀ unknown. A handsome little species, readily distinguished by the polished, impunctured body, and by the abdomen being much narrowed and somewhat strangulated at base, with two large lunate marks on the second segment above.

♀♀.—*Body coarsely punctured.*

12. *Philanthus ventrilabris*, Fabr.

Philanthus ventrilabris, Fabr., Ent. Syst. Suppl. p. 268. Coqueb. Ill. Icon. p. 96, pl. 22, fig. 2.

Philanthus ventrilabris, Fabr., Syst. Piez. p. 303. Say, Amer. Entom. plate 49.

Anthophilus ventrilabris, Dahlb., Hym. Europ. i, p. 497.

Black; face, large spot on front in ♂, base of antennæ, collar, tubercles, tegulæ, postscutellum, legs except base, and fasciæ on abdomen, interrupted on first, and broadest on second segment, yellow; legs fulvous at base; wings subhyaline.

Female.—Black, opaque, very densely and grossly punctured, slightly pubescent; head much wider than the thorax, the front slightly prominent; sides of the face not extending above the insertion of the antennæ, clypeus, mandibles except tips, two elongate spots between the insertion of the antennæ, confluent beneath, and with a small, more or less distinct spot between them, and a line behind the summit of the eyes, yellow or very pale yellowish-white; antennæ rather short, thickened, black above, the scape and two basal joints of flagellum beneath, whitish, rest of the flagellum beneath fulvous. Thorax with a well-impressed central longitudinal line above; collar, tubercles and a large spot behind, tegulæ, and a line on postscutellum, whitish, yellowish-white or yellow; metathorax more densely and finely sculptured, abruptly truncate behind. Wings uniformly stained with pale yellowish-fuscous; nervæ dusky honey-yellow. Legs honey-yellow; tips of the four anterior femora more or less, and the tibiæ exteriorly, white; tarsi dusky. Abdomen ovate, not narrowed at base, with rather close, deep and coarse punctures, much coarser than those of the thorax; first segment with a lateral transverse yellowish mark about the middle, pointed within; second segment with a broad basal yellowish band, slightly interrupted in the middle; the third, fourth and fifth segments each with a yellowish-white apical fascia, with the anterior margin more or less uneven, dilated on the sides; apical segment smooth, depressed, rounded at tip, with a whitish spot on each side at base; beneath black, immaculate, finely punctured and shining. Length 6 lines; expanse of wings 10 lines.

Male.—Resembles the female, but the head is not so transverse, the markings are bright-yellow; the front, above the antennæ, has a large transverse spot; the antennæ are longer, curled at extreme tips, the three basal joints are entirely yellow, the fourth, fifth and sixth joints are yellow beneath and fuscous above, the five following joints have a pale spot beneath, the apical joint is dilated, curved, compressed and truncate at tip; the tarsi are paler; the wings more dusky at tips and faintly subviolaceous; the abdomen is sometimes tinged with ful-

vous at base, the first segment has a more or less broad yellow band, sometimes widely, sometimes narrowly, interrupted in the middle; the band on the second segment is entire; the remaining segments have the fasciæ similar to those in the female, and the sixth segment has also a narrow fascia on its apical margin; the venter is more or less tinged with piceous, immaculate. Length same as ♀.

Hab.—Pennsylvania (Cresson); Delaware (Dr. Wilson); Illinois (Walsh and Kennicott); Rocky Mountains (Ridings); "North Carolina and East Florida" (Smith). Coll. Ent. Soc. Philad. and Chicago Academy of Sciences.

Seven ♀, six ♂ specimens.

13. *Philanthus frontalis*, n. sp.

Black; face above and below antennæ, base of antennæ, collar, tubercles and a mark behind, tegulæ, postscutellum, tibiæ and tarsi, and uninterrupted fasciæ on abdomen, yellow; wings fulvo-fuscous; base of legs fulvous.

Male.—Deep black, opaque, very densely and deeply punctured, slightly pubescent; head transversely ovate, prominent on the front; the face beneath the antennæ connected with a very large transverse mark above the antennæ, occupying nearly the entire front, clypeus, spot on mandibles, and a spot or dot on each side of the occiput, bright lemon-yellow; antennæ shaped and colored as in *P. ventilabris*. Thorax: mesothorax with several longitudinal impressed lines, sometimes obsolete; collar, tubercles, and a large elongate spot behind, tegulæ, and the postscutellum, lemon-yellow; metathorax more densely and finely sculptured, abruptly truncate behind. Wings pale fulvo-hyaline, darker and subviolaceous at tips; nervures fuscous, stigma and costa honey-yellow, paler anteriorly. Legs yellow; coxæ, trochanters, and femora, except tips more or less, honey-yellow; tibiæ sometimes dusky beneath. Abdomen elongate, the sides parallel, with close, very deep and coarse punctures, much coarser than those of the thorax; the two basal segments each with a broad, continuous, lemon-yellow band, that on the first situated on the middle, that on the second at base, the latter sometimes emarginated on each side of the middle posteriorly; four following segments each with a narrow apical yellow fascia, more or less uneven anteriorly and each gradually narrower than the other; apical segment immaculate, rounded at tip; venter black, shining; finely punctured, the segments with an obscure brownish stain on their apical middle. Length $5\frac{1}{2}$ — $6\frac{1}{2}$ lines; expanse of wings 9—10 lines.

Hab.—Rocky Moun., Colorado Ter. (Ridings.) Coll. Ent. Soc. Phila.

Four ♂ specimens; ♀ unknown. Closely allied to the preceding species, and may possibly be a variety of it.

14. *Philanthus punctatus*, Say.

Philanthus punctatus, Say, Long's Second Expedition, ii, p. 342.

Anthophilus gibbosus, Dahlb., Hym. Europ. i, p. 192 ♂ ♀.

Cheilopogonus punctiger, Westw., Zool. Mag. v, p. 441, pl. 22, fig. 4.

Black; face, spot between antennæ, collar, spot beneath the wings, postscutellum, legs in part, broad band on second abdominal segment and the narrow apical margins of the following segments yellow; wings dusky.

Female.—Black, rather shining, with large, deep, sparse punctures, slightly pubescent; head transverse, much wider than the thorax, the vertex very densely and finely punctured, the face, cheeks and occiput sparsely so; sides of the face, clypeus, spot between the antennæ, spot on base of mandibles, and a dot behind and another just above the summit of the eyes, yellowish, sometimes obscure; antennæ black, gradually thickened towards the tips, the scape yellowish beneath. Thorax above with large, deep scattered punctures, smaller and more dense on the pleura; collar, tubercles and a spot behind, tegulæ and the postscutellum, yellow; metathorax closely and finely punctured, pubescent, with an elongate, rather deep fovea on the disk. Wings stained with pale fuscous, darker at tips, paler at base, slightly iridescent; nervures fuscous, yellowish at base, as well as the costa and stigma. Legs: coxæ, trochanters and base of femora, black, apical half of the latter honey-yellow; tibiæ and tarsi yellowish, the latter dusky at tips. Abdomen ovate, with large, very deep and coarse punctures; the incisures between the segments very deep; basal segment strangled, and immaculate; second segment with a broad, continuous yellowish band at base; apical submargins of the two or three following segments with narrow yellowish, sometimes wavy, fasciæ; apical segment smooth, shining, impunctured, immaculate, and rounded at tip; beneath black, shining, immaculate. Length $4\frac{1}{2}$ — $5\frac{1}{2}$ lines; expanse of wings $7\frac{1}{2}$ — $8\frac{1}{2}$ lines.

Male.—Closely resembles the female, but differs as follows: the head is less transverse, the face has only a yellow stripe on each side, a central spot on the clypeus, and another of the same size on the middle of the front, immediately above the antennæ, the latter are longer, the scape has a yellow spot at tip within and the base of the flagellum is often more or less tinged with yellowish; the scutellum has a yellow spot or line, rarely wanting; the wings are darker towards the tips, and subviolaceous, nearly hyaline at base; the basal segment of the abdomen has occasionally a yellow dot on each side; the two apical segments and the venter are immaculate. Length same as ♀.

Hab.—Penn. (Cresson); New Jersey (Cresson); Delaware (Dr. Wilson); New York (Angus); Mass. (Ridings); Virginia (Ridings);

"Indiana" (Westwood); Illinois (Dr. Lewis, Walsh and Kennicott).
Coll. Ent. Soc. Philad. and Chicago Academy of Sciences.

Six ♀, eleven ♂ specimens.

15. *Philanthus albifrons*, n. sp.

Black; face white in ♀, sides of face, clypeus and large round spot on the front in ♂ also white; interrupted line on collar, tegulæ, spot beneath the wings, line on postscutellum, tibiæ and tarsi, spot on each side of first abdominal segment, broad interrupted band on second segment and apical fasciæ on three following segments, yellow or whitish; wings yellowish dusky.

Female.—Black, shining, thinly pubescent; head and thorax with sparse fine punctures, the former transverse and much broader than the thorax; the face beneath the antennæ, extending a little above on the frontal orbits and a little emarginated between the antennæ, and the clypeus, white; mandibles, except tips, and a line behind the summit of the eyes, yellow; antennæ black, rather short, thickened, base of the flagellum narrowed, the joints with more or less distinct testaceous spots beneath, the scape whitish in front. Thorax: mesothorax sparsely punctured, with a broad shallow dorsal channel, and a finely impressed longitudinal line on each side over the tegulæ; scutellum with a central impressed line; an interrupted line on the collar, a spot beneath the anterior wing, postscutellum and the tegulæ, yellowish-white; metathorax pubescent, closely and indistinctly punctured, with a central impressed longitudinal line. Wings stained with fulvo-fuscous, darker and subviolaceous at tips; nervures honey-yellow. Legs: coxæ and trochanters black; femora honey-yellow, black at base and yellow at tips, especially on the posterior pair; tibiæ and base of tarsi yellow; rest of tarsi more or less dusky. Abdomen oblong-ovate, strangulated at base, the second and third segments deeply incised at base; the three basal segments with very deep, large, scattered punctures, the apical segments almost impunctate, smooth and polished; basal segment globose above with a yellow spot or dot on each side of the middle; second segment with a broad, median yellow band, always interrupted in the middle; the three following segments with an apical, continuous yellow band, dilated on the sides; apical segment dusky, yellow at base; beneath piceous, polished, the second and three following segments with a yellow spot on each side, very small on the second segment, and very large and sometimes confluent on the following segments. Length 6 lines; expanse of the wings 10 lines.

Male.—Very similar to the female, differing principally in the ornamentation of the head, which has a broad line on each side of the face, a large rounded spot on the front just above the antennæ, the clypeus

entirely except a black dot on the apical middle, and an oblique line or dot behind the eyes, all white; the antennæ are longer and more slender, especially so at base, entirely black except a whitish spot on the second, third and fourth joints of the flagellum beneath; the wings are much clearer, being only slightly dusky at tips; the femora are entirely black except the tips, which are whitish; the markings of the abdomen are much the same, except that the narrow yellow or whitish fasciæ on the apical margins of the third and three following segments are more or less wavy, the apical segment is black, and subtruncate at tip; beneath black, slightly pubescent, with a white dot on the extreme sides of the second and following segments. Length $5\frac{1}{2}$ — $6\frac{1}{2}$ lines; expanse of wings $9\frac{1}{2}$ — $10\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Five ♀, two ♂ specimens. A very handsome and distinct species.

16. *Philanthus flavifrons*, n. sp.

Black; face, mandibles, base of antennæ, posterior orbits, collar, tegulæ, two spots beneath the wings, postscutellum, two spots on metathorax, most of legs, and broad bands on abdomen, the two first interrupted, yellow; wings dusky.

Female.—Black, shining; head without distinct punctures; the face, extending a little above the antennæ, both in the middle and sides, clypeus, mandibles except tips, a long continuous line on the cheeks, extending on to the occiput, and two small oblique lines behind the ocelli, bright yellow; antennæ black above, fulvous beneath, except the three basal joints which are yellow. Thorax polished, with fine sparse punctures, very sparse on mesothorax, which has a rather deep dorsal channel and a faintly impressed longitudinal line on each side over the tegulæ; collar, tubercles and a transverse spot behind, a large triangular mark on each side of the pleura, tegulæ, an oblique spot at each basal corner of the scutellum, a line on the postscutellum, and a large rounded spot on each side of the metathorax posteriorly, bright yellow; scutellum longitudinally impressed on the middle; metathorax very closely and rather finely punctured, slightly pubescent, with an elongate rather deep fovea on the disk. Wings tinged with yellowish, dusky at tips; nervures dull honey-yellow. Legs yellow; the coxæ, trochanters, and base of femora more or less, black, the former with a white spot beneath; tips of the tarsi a little dusky. Abdomen ovate, slightly strangled at base, the second and third segments deeply incised at base; the three or four basal segments with very deep, large, coarse punctures, becoming smaller towards the tip; first and second segments each with a large transverse bright yellow spot on each side,

those on the first much the smallest; the three following segments with a broad, continuous bright yellow, apical band, more or less narrowed in the middle anteriorly; apical segment dusky yellow; beneath, the second and three following segments are yellow, the apical middle more or less dusky and the second with the basal corners black; apical segment dusky. Length $5\frac{1}{2}$ lines; expanse of wings $9\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Two ♀ specimens; ♂ unknown. This lovely and very distinct species is readily distinguished from the preceding, by the yellow face, the long continuous line on the cheeks, the two large spots on metathorax and the yellow venter.

The following species are unknown to me:—

17. *Philanthus solivagus*, Say.

Philanthus solivagus, Say, Bost. Journ. Nat. Hist. i, p. 383.

"Black, with small punctures; tergum fasciate on each segment.

"Inhabits Indiana.

"♂ Body black; punctures numerous, small: hypostoma, anterior orbits, to the emargination, and large spot above the insertion of the antennæ yellow: collar, margin yellow, slightly interrupted in the middle: stethidium immaculate: wing-scale yellow: wings very slightly tinged with dusky; nervures fuscous, towards the base and stigma honey-yellow: tergum, segments having each a greenish-yellow band on the posterior submargin, that of the first segment largest, the others subequal; sixth segment immaculate: pleura, pectus and venter immaculate: knees, tibiæ and tarsi yellow; posterior pair of tibiæ with a spot on the posterior tip, and their tarsi above tinged with ferruginous.

"Length two-fifths of an inch."

18. *Philanthus barbatus*, Smith.

Philanthus barbatus, Smith, Brit. Mus. Cat. Hym. iv, p. 473.

"*Male*. Length 5 lines.—Black: closely and rather finely punctured on the face; the vertex shining, the punctures scattered; the anterior ocellus placed in a fossulet; the clypeus, anterior margin of the face, inner orbit of the eyes not quite so high as their emargination, and a large ovate spot above the antennæ, yellow; the face furnished with a long dark beard on each side of the clypeus or its anterior margin. Thorax shining, sparingly punctured; a spot beneath the wings and the postscutellum yellow; wings fulvo-hyaline, the nervures pale ferruginous. Abdomen shining, the first segment with a

few large deep punctures, or foveæ; the second segment with similar puncturing; the third segment has a few punctures on its apical margin; a minute spot on each side of the basal segment; a broad interrupted fascia in the middle of the second segment; the third, fourth and fifth segments with a narrow fascia on their apical margins, abruptly widened at the lateral margins, yellow; beneath, black.

“*Hab.*—North America.”

19. *Philanthus crabroniformis*, Smith.

Philanthus crabroniformis, Smith, Brit. Mus. Cat. iv, p. 474.

“*Male.* Length $4\frac{1}{2}$ lines.—Black: the face below the antennæ, with a line continued upwards along the orbit of the eyes as high as the emargination, a large campanulate-shaped spot above the clypeus, a spot behind the eyes, two on the vertex, the mandibles, scape, and three basal joints of the flagellum in front, yellow; the head large, shining, finely but not closely punctured. Thorax: the hinder margin of the collar raised, yellow, and subinterrupted in the middle; the tegulæ, tubercles, two spots beneath the wings, two on the scutellum, the post-scutellum, a spot at the lateral posterior angles of the metathorax, the apex of the femora, the tibiæ and the tarsi, yellow; the wings fulvo-hyaline, the nervures pale ferruginous, with a faint cloud beyond the marginal cell; the mesothorax smooth and shining, and having a few scattered punctures; in the middle is a deep longitudinal channel, and a finer one on each side; the posterior margin closely punctured in front of the scutellum. Abdomen shining, with deep scattered punctures; the first segment with a broad slightly interrupted band in the middle; the second segment has a broad band at its base, its hinder margins waved; the two following segments yellow, except their extreme base; the three apical segments entirely yellow.

“*Hab.*—California.”

EUCERCERIS, nov. gen.

Head large, wider than the thorax, subquadrate, wider and more transverse in the ♀, with the face much broader anteriorly; eyes lateral, more or less ovate, entire; ocelli in a triangle on the vertex; antennæ subclavate, inserted above the clypeus, in the middle of the face, approximated; mandibles stout, acute or subacute at their apex; clypeus 3-toothed at tip, and trilobate in ♂, scarcely so in ♀. *Thorax* ovate, the collar transverse, the metathorax obtusely rounded or subtruncate. *Wings*: the anterior wing with one marginal and three submarginal cells; the ♀ has the marginal cell oblong and obtusely rounded

at tip, the first submarginal cell much longer than the two following,



Fig. 2, ♀. the second triangular, petiolated, and receiving the first recurrent nervure before the middle, the third submarginal very large, subquangular, the tip exceeding that of the marginal, the second recurrent nervure uniting with the second transverse cubital nervure (see Fig. 2); the ♂ has the marginal rather shorter, subtriangular, especially at base, truncate or subtruncate at tip, the posterior nervure descending in a gradual curve, and the inferior edge in an angle, to meet the superior angle of the second submarginal cell, which is triangular and oblique, receiving the

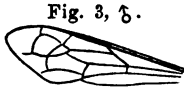


Fig. 3, ♂. first recurrent nervure before the middle; the second recurrent nervure either unites with the second transverse cubital nervure, or is received near to the base of the third submarginal cell which is shaped much as in the ♀, but varying in being a trifle shorter and more quadrate (see Fig. 3). *Legs* stout, rather strongly spinose, the posterior tibiae serrate, the anterior tarsi ciliated exteriorly, but not strongly so. *Abdomen* as in *Cerceris*.

This genus is much more closely related to *Cerceris* than to *Philanthus*, to which the two described species have been referred; it differs from the former genus especially in the neururation of the anterior wings, which, however, shows a remarkable difference in the male and female.

1. *Eucerceris zonatus*, Say.

Philanthus zonatus, Say, West. Quar. Rep. ii, p. 79; Amer. Entom. plate 49.

Black; face, line between antennæ, collar, two spots on scutellum, line on postscutellum, two marks on metathorax, and bands on abdomen, the first two broad, the others narrow, yellow; base of antennæ, and legs honey-yellow; wings fuscous, violaceous, costa darker beyond the base; tegulæ and legs honey-yellow.

Female.—Black, opaque, densely and deeply punctured, clothed with a very short indistinct golden pile; the head large, very broad and transverse, the face flattened, the lower part very wide, longitudinally prominent between the antennæ; a large triangular mark on each side of the face, the clypeus except the extreme apical margin, and a longitudinal mark between the antennæ, yellowish; lateral lobes of the clypeus a little concave, the central lobe sparsely punctured and shining; most of the cheeks and occiput obscure ferruginous; mandibles polished, reddish-brown, black at tip, with a large, triangular, obtuse, black-tipped tooth above near the base; antennæ slender, the basal half pale rufous, the apical half black. *Thorax*: sides of the prothorax carinate, the posterior margin yellow; scutellum dull ferruginous, with a yellow-

ish spot on each side at base, as well as a line on the postscutellum; metathorax densely and strongly punctured, with a large subpyriform yellow mark on each side, the punctures on the enclosed basal space running into slightly oblique striæ, with a finely impressed line down the middle, continued to the tip of the metathorax; tegulæ honey-yellow. Wings fuliginous, much darker on the anterior margin, with a deep violaceous reflection; nervures fuscous; costal nervure honey yellow. Legs entirely honey-yellow. Abdomen opaque, very densely and finely punctured; first segment small, black, with a broad apical yellow band, deeply emarginated on the middle anteriorly; second segment yellow, with the basal margin irregularly brownish, and a transverse ferruginous disk on the middle; the three following segments each with a narrow, continuous, subapical, yellow band; the extreme apical margins of all the segments shining brown; a stain on each side of the third segment, and the apical segment almost entirely, reddish-brown; apical segment obtusely rounded at tip; venter piceous, shining, sparsely punctured, the second segment fulvous. Length $7\frac{1}{2}$ lines; expanse of wings 12 lines.

Male.—Differs from the female as follows:—the face beneath the antennæ is entirely yellow, this color extending upwards on the anterior orbit for a short distance above the insertion of the antennæ; between the antennæ there is a longitudinal yellow line almost reaching the anterior ocellus; the mandibles are honey-yellow, black at tips; the cheeks and occiput are black, excepting a fulvous dot behind the eyes; the collar has a narrow interrupted yellow line, the postscutellum a yellow line; the scutellum is always black, generally immaculate, one specimen only having a yellow dot on each basal corner; the metathorax has only a small yellow spot or dot on each side at extreme tip, sometimes subobsolete; the tegulæ has a yellow spot in front; the wings are clearer, being subhyaline, with the broad anterior margin commencing at the base of the first submarginal cell of the wing, yellowish-fuscous, darker at tip and in the second submarginal cell; the legs are paler, with the tibiæ and tarsi more or less yellowish; the coxæ, trochanters and femora within and at base, are sometimes blackish; the abdomen is black, with the yellow markings much as in the ♀, except that the apical half only of the second segment is yellow, with a transverse black line across the middle, more or less confluent in the middle with the black at the base of the segment; the sixth segment with an interrupted, subobsolete yellowish wavy band at tip, sometimes wanting, and occasionally the band on the fifth segment is abbreviated

on each side; apical segment flattened, subquadrate, truncate at tip, with the apical angles acute; the venter has a transverse reddish-brown stain on the apex of the second and one or more of the following segments. Length 6—8 lines; expanse of wings 10—12½ lines.

Hab.—"Arkansa," (Say); Illinois, (Dr. Samuel Lewis and Mr. Walsh.) Coll. Ent.Soc. Philad.

One ♀, six ♂ specimens. This is doubtless the *Philanthus zonatus* of Say, although he says nothing of the broad yellow bands on the two basal segments of the abdomen.

2. *Eucerceris laticeps*, n. sp.

Black: spot on each side of face and posterior orbits ♀, base of antennæ, and mandibles except tips ferruginous; face of ♂, interrupted line on collar, spot on each side of metathorax, and interrupted bands on first and second abdominal segments, yellowish; legs honey-yellow; wings fusco-hyaline, much darker on the anterior margin.

Female.—Black, opaque, very closely and deeply punctured, clothed with a very short indistinct golden pubescence; head very wide, and, as well as the face and mandibles, shaped as in the preceding species; an irregular triangular mark on each side of the face, a spot on middle of clypeus, mandibles except tips and upper margin, and broad posterior orbits, rufo-ferruginous; antennæ slender, black, the three basal joints fulvous. Thorax shaped and sculptured as in the preceding species; a narrow interrupted line on the collar, and an ovate spot on each side of the metathorax, obscure whitish; postscutellum faintly tinged with brownish; tegulæ testaceous, with a yellow spot in front. Wings colored as in the preceding species. Legs bright honey-yellow; coxæ, trochanters and base of the femora behind more or less blackish. Abdomen shaped as in the preceding species, black; first segment with a broad subapical yellow band, slightly interrupted in the middle; second segment with a subtriangular yellow spot on each side at tip; apical segment tinged with brownish, upper surface flattened with the sides acutely carinated and the tip obtuse; beneath piceous, shining, with the apical margins of the segments more or less brownish. Length 7 lines; expanse of wings 12 lines.

Male.—Differs from the female as follows:—the head not so broad; the face beneath the antennæ is yellow, this color extending upwards on the anterior orbit for a short distance above the insertion of the antennæ; between the antennæ there is a longitudinal yellow line almost reaching the anterior ocellus; the clypeus has a small black line on each side of the middle lobe, with the three teeth at tip also black; the collar and metathorax are immaculate; the wings are clearer

except the anterior margin which is almost as dark as in the ♀; the femora are almost entirely black beneath, and the tibiæ are slightly tinged with yellowish exteriorly; the second and third segments have each a subapical, narrow, yellow fascia, that on the third segment interrupted on each side; apical segment subquadrate, sparsely punctured, the sides raised, the tip subtruncate, the apical angles acute; beneath piceous black. Length 7 lines; expanse of wings $11\frac{1}{2}$ lines.

Hab.—Massachusetts. (Ridings.) Coll. Ent. Soc. Philad.

Two ♀, one ♂, specimens. Very similar to *E. zonatus* in the shape and sculpture, but quite distinct by the different coloration.

3. *Eucroceris superbus*, n. sp.

Black; face, mandibles, collar, spot beneath the wings, breast, base of legs and broad bands on abdomen, yellow; most of legs honey-yellow, wings subhyaline, first submarginal cell yellow, the tip beyond dark fuliginous, violaceous.

Male.—Black, slightly shining, very closely and deeply punctured, thinly clothed with a short palish pubescence; the entire face beneath the antennæ, extending for a short distance upward on the anterior orbit, a spot above and between the antennæ, and the mandibles except tips, bright yellow; the cheeks have a dull rufous stain; antennæ black, the five or six basal joints fulvous, tinged with yellowish beneath, the scape entirely yellow beneath. Thorax: a continuous line on the collar, tegulæ, a spot beneath the wings, and a large triobed spot on the breast, between the four anterior coxæ, lemon-yellow; enclosed basal space of metathorax transversely striated, with a deep central longitudinal line. Wings subhyaline; the second submarginal cell bright yellow, beyond which the apex is dark fuliginous, with a brilliant violaceous reflection; the nervures dull honey-yellow. Legs honey-yellow; the coxæ and trochanters beneath, the four anterior femora beneath, and the tarsi more or less, lemon-yellow. Abdomen strangulated at base, the segments strongly contracted at their sutures, and transversely impressed across their middle; the first five segments have each a broad, continuous bright yellow band, leaving merely the anterior and posterior margins black; the two apical segments black, the sixth with a yellowish dot on each side, the seventh immaculate and shaped as in the two preceding species; venter shining; first segment with a large yellow central mark; the second and third segments honey-yellow, the former with a transverse bilobed yellow mark at tip, remaining segments piceous-black, the apical margins fringed with long, curved, fuscous pubescence. Length 7 lines; expanse of wings 13 lines.

Var. ♂.—Much smaller, the markings are lemon-yellow, the mark between and above the insertion of the antennæ is somewhat wedge-shaped; the ferruginous stain on the cheek is large, with a yellowish line on the posterior orbit; the line on the collar is slightly interrupted in the middle; the breast has a semicircular yellow line on each side of the middle, where they are almost confluent; the postscutellum has a narrow yellow line, and the metathorax a subpyriform mark on each side; the wings are paler, though similarly colored; the legs are pale honey-yellow, with the coxæ and trochanters beneath, and the posterior tibiæ exteriorly, yellow; the markings of the abdomen are the same, except that the band on the fifth segment has a black dot on the middle of the anterior margin, the sixth segment has a band deeply emarginated in the middle anteriorly, and the second ventral segment has an interrupted yellow line, while the two or three following segments are brownish, with an obsolete yellowish spot on each side. Length 5 lines; expanse of wings $9\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Two ♂ specimens; ♀ unknown. This is indeed a superb species, the color and markings are bright and handsome, and the wings beautifully colored.

4. *Eucerceris flavocinctus*, n. sp.

Black; spot on each side of face, line between antennæ, spot at base of clypeus, spot behind eyes, interrupted line on collar, tegulæ, tibiæ and entire fasciæ on abdomen, yellow; tarsi fulvous; wings subhyaline, the anterior margin fuscous.

Female.—Deep black, shining; head not unusually wide, closely punctured; a cuneiform mark on each side of the face, a line between the antennæ, pointed above, dilated beneath, and confluent with a transverse spot on the middle of the clypeus, which has sometimes a yellow dot on each lateral lobe, and a spot behind the eyes near their summit, yellow; anterior margin of the clypeus broadly emarginated; mandibles and antennæ black, the base of the flagellum slightly tinged with dull testaceous. Thorax shining above; mesothorax and scutellum with scattered, rather fine punctures, the former with a short impressed line on each side over the tegulæ; pleura closely punctured; metathorax finely sculptured, the punctures running into fine transverse striæ especially on the sides, the enclosed basal space covered with fine, slightly oblique striæ, and with a deep central longitudinal channel; an interrupted line on the collar, and sometimes another on the postscutellum, yellow; tegulæ honey-yellow, with a yellow spot in

front. Wings subhyaline, tinged with yellowish, the costa, from the base of the first submarginal cell to the apex of the wing, fuscous; nervures honey-yellow. Legs black; extreme tips of the femora, and the tibiæ, except the two anterior pairs within, yellow; tarsi honey-yellow. Abdomen shining, closely punctured, the basal segment depressed; the first five segments above each with an entire subapical, bright yellow fascia, that on the first segment very slightly interrupted in the middle, that on the second slightly dilated in the middle; apical segment immaculate, the dorsal surface oblong, opaque, the apex obtuse, the carinated sides fringed with fuscous pubescence, the sides of the segment deeply excavated; beneath black, shining, immaculate, each segment with a deep longitudinal depression on the apical middle, and their apical margins with deep scattered punctures. Length 6—7 lines; expanse of wings 10—11 lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Two ♀ specimens; ♂ unknown.

5. *Eucerceria cingulatus*, n. sp.

Black; face, line between antennæ, mandibles, spot behind the eyes, collar, tubercles, postscutellum, spot beneath the wings, breast, legs, and entire bands on abdomen, above and beneath, yellow; wings stained with yellowish.

Male.—Black, shining, thinly clothed with pale pubescence; head closely and finely punctured; face, clypeus, mandibles except tips, frontal orbits, a line between the antennæ, and a spot behind the eyes near their summit, lemon-yellow; antennæ black, the scape yellow beneath. Thorax above shining, with rather deep, sparse punctures, the pleura closely punctured; a line over the collar, tegulæ, line on postscutellum, spot beneath the wings, and most of the breast between the four anterior coxæ, lemon-yellow; metathorax densely punctured, opaque, the enclosed basal space a little shining, covered with fine transverse, or slightly oblique striæ, and with a deep central longitudinal channel. Wings stained with yellowish, especially on the costa; nervures honey-yellow. Legs lemon-yellow; the coxæ, trochanters and femora within, black; tarsi tinged with honey-yellow. Abdomen with a continuous, lemon-yellow, subapical fascia on each segment, except the last, that on the second broadest and transversely emarginated in the middle anteriorly; apical segment immaculate, subquadrate, the carinated lateral margin ending in a divergent acute tooth on each side at tip; beneath shining, the second and three following segments each with a broad lemon-yellow band, broadest on the second segment. Length $5\frac{1}{2}$ — $6\frac{1}{2}$ lines; expanse of wings $9\frac{1}{2}$ — $10\frac{1}{2}$ lines.

Hub.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Two ♂ specimens. This may be the ♂ of *E. flavocinctus*.

6. *Euceroeris fulvipes*, n. sp.

Black; sides of face, line between antennæ, clypeus entirely in ♂, interrupted into three spots in ♀, collar, two or three spots beneath the wings, tegulæ, two large spots on metathorax, line on both scutellums, and entire bands on abdomen, yellow; legs fulvous, wings hyaline, the apical costal margin fuscous, violaceous.

Female.—Black, shining, deeply and closely punctured, more sparse on the mesothorax and scutellum; a spot on each side of the face, a line between the antennæ, a spot on each side of the clypeus, and a cuneiform spot behind the eyes, yellowish; middle of clypeus and the mandibles fulvous, the latter black at tips, one specimen has a yellow spot on the middle of the clypeus; antennæ black, the scape within at tip, and the third and fourth joints of the flagellum, fulvous. Thorax: line on the collar, tubercles and a spot behind, line on the scutellum and postscutellum, a large ovate spot on each side of the metathorax, and a small oblique line on each side of the enclosed basal space, pale yellowish; the latter obliquely striated, with a deep central channel; tegulæ fulvous, sometimes with a spot in front. Wings hyaline; the costa, from the base of the first submarginal cell to the apex of the wing, broadly yellowish-fuscous, slightly violaceous; nervures honey-yellow. Legs entirely bright fulvous. Abdomen shining, with deep sparse punctures; basal segment with a broad pale yellow band, contracted in the middle; second and three following segments each with a continuous, subapical, pale yellow band, more or less dilated on the sides; apical segment immaculate, tinged with brownish, opaque, shaped and sculptured as in ♀ *E. flavocinctus*; beneath black, immaculate. Length $5\frac{1}{2}$ lines; expanse of wings $7\frac{1}{2}$ lines.

Male.—Differs from the female as follows:—the sides of the face are broadly yellowish-white, extending for a short distance above the antennæ on the anterior orbit; there is a yellowish spot just above the clypeus, connected with a line of the same color between the antennæ which reaches to the anterior ocellus; the clypeus entirely, the mandibles except tips are yellowish-white; the spot behind the eyes is round; the scape is yellowish within, and the second, third and fourth joints of the flagellum are fulvous; there are two large yellowish-white marks between the wings, the lower one connected beneath with a longitudinal mark of the same color between the four anterior coxæ; the enclosed basal space of the metathorax is immaculate; all the coxæ

and trochanters beneath, and the anterior femora and tibiæ in front, are white; the markings of the abdomen above are much the same, except that the sixth segment has a band similar to that on the fifth; the apical segment is entirely fulvous, with a divergent tooth on each side at tip; the venter is pale fulvous, the second and third segments have each a whitish band, the former sinuate anteriorly, and the third segment has a whitish spot on each side. Length $4\frac{1}{2}$ lines; expanse of wings $7\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

7. *Eucerceris canaliculatus*, Say.

Philanthus canaliculatus, Say. West. Quar. Rep. ii, p. 79; American Entomology, plate 49.

“Pale yellow; vertex, disk of the thorax, and incisures of the tergum, reddish-brown.

“Body pale yellow; vertex reddish-brown; front with two longitudinal reddish-brown lines passing through the base of the antennæ; antennæ rufous, black at tip; mandibles black at tip: superior wings with a longitudinal brownish line on the middle from near the base to the tip; radial cellule rounded at tip, and at its inferior angle descending to meet the superior angle of the second cubital cellule, which is triangular: tergum with a transverse groove on the middle of each segment, and a marginal smaller one; incisures reddish-brown.

“*Obs.*—When traversing the Arkansaw region with Major Long's party, I obtained a single specimen of this insect, which is a male; it is so very similar in general appearance and color to *Cerceris bidentata* nob., that but for its generic differences, I should almost have been led to consider it as a mere sexual variety of that species. But it cannot be placed in the genus *Cerceris*, as the mandibles are entirely unarmed within, and the second cubital cellule is not petiolated, and the eyes are not emarginated.”

This species is unknown to me. The size of this insect is not given in the description, but the figure on the plate measures $7\frac{1}{2}$ lines in length.

Genus *CERCERIS*, Latr.

Head large, wider than the thorax, subquadrate; eyes lateral, ovate, entire; ocelli in a triangle on the vertex; antennæ subclavate, inserted above the clypeus in the middle of the face, approximated, mandibles stout and tridentate, acute or subacute at their apex; clypeus trilobed, the middle lobe being often produced into various shapes. *Thorax* ovate, the collar transverse, the metathorax obtusely

rounded or subtruncate. *Wings*: the anterior wing with one marginal and three submarginal cells; the marginal oblong and obtusely

Fig. 4. rounded at tip; the first submarginal cell longer than the two following, the second triangular or subtriangular, petiolated, and receiving the first recurrent nervure about the middle; the third moderate, obliquely subquadrate, much narrowed towards the marginal and receiving the second recurrent nervure near its base. *Legs* stout, spinose, the posterior tibiae more or less serrate, the anterior tarsi ciliated exteriorly. *Abdomen* oblong, the first segment narrowed to one-half the width of the following, and subglobose, the margins of the segments more or less constricted; the apical segment with its dorsal surface flattened, bordered on either side by a sharp carina, and a lateral oblique plane also bordered by a carina.

1. *Cerceris fumipennis*, Say.

Cerceris fumipennis, Say, Bost. Journ. Nat. Hist. i, p. 381.

Cerceris cincta, Dahlb., Hym. Europ. i, p. 204 ♂.

Black; three subquadrate spots on face, two spots on collar, postscutellum, and broad band on second segment of abdomen, yellowish-white; wings blackish.

Female.—Deep black, strongly punctured, clothed with a short pale subsericeous pubescence, hoary on the thorax beneath, legs and abdomen; head closely punctured, with a large subquadrate, pale yellowish mark on each side of the face and a semicircular or subovate one on the central lobe of the clypeus, sometimes much reduced, the lateral lobes densely fringed with a pale ochraceous pubescence; anterior margin of the clypeus truncate and carinate. Thorax more deeply and less closely punctured than the head, sericeous, especially the pleura and metathorax; a transverse spot on each side of the collar, and the postscutellum, pale yellowish; metathorax abrupt and coarsely punctured, the enclosed triangular basal space finely sculptured and sometimes shining; tegulae shining black, sometimes with a pale spot in front. Wings dark fuliginous, black along the costa, with a deep violaceous reflection; nervures black. Legs black, sericeous and somewhat hoary; a line on the four anterior tibiae within, and most of the posterior pair, yellowish-white; tips of anterior tarsi testaceous. Abdomen covered with a beautiful hoary sericeous pile, more obvious in certain lights, and with deep punctures, rather sparse on the second segment, and becoming closer on the apical segments; first segment small, subglobose, flattened at base, second segment convex, with a broad, apical, pale yellow band, more or less attenuated in the middle

anteriorly; third segment often with a small yellow spot on each side at tip, sometimes reduced to a mere dot, and sometimes entirely wanting; the third and following segments deeply incised at base; venter immaculate. Length $5\frac{1}{2}$ —10 lines; expanse of wings 9—15 lines.

Male.—Resembles the female, but differs as follows:—the mark on each side of the face is larger and elongate, the clypeus has a large suborbicular, yellowish-white mark, often much reduced or entirely wanting; the clypeus has the lateral fringe golden-yellow, very brilliant in certain lights; the tegulæ has a yellowish-white spot, rarely wanting; the wings are clearer; the band on the second segment of the abdomen is of equal width and not narrowed on the anterior middle; the four following segments have each a narrow fascia, often more or less interrupted, and sometimes obsolete, especially in the middle; sometimes the abdomen is marked as in the female, with the lateral spot on the third segment always present. Length 5—6½ lines; expanse of wings 8—9½ lines.

Hab.—Massachusetts (Ridings); Delaware (Dr. Wilson); Illinois (Walsh); Louisiana (Kennicott). Coll. Ent. Soc. Philad., and Chicago Academy of Sciences.

Seventeen ♀, fourteen ♂ specimens. Easily recognized by the blackish wings, and the broad pale yellowish band on the second abdominal segment. The females vary much in size.

2. *Cerceris clypeata*, Dahlb.

Cerceris clypeata, Dahlb., Hym. Europ. i, p. 221.

Black; face more or less, two spots on collar, postscutellum, spot on each side of first abdominal segment in ♀, broad band on second, narrow apical margins of remaining segments except last, and part of legs, yellow; wings dusky.

Female.—Black, opaque, closely and strongly punctured, clothed with a short palish pubescence; on each side of the face a longitudinal, more or less developed, orbital yellow mark; the carina between the antennæ sharply defined, sometimes with a minute yellowish spot or line above the clypeus, sometimes there is a yellow spot behind the eyes near their summit; clypeus more or less produced in the middle. sometimes greatly so, the upper surface moderately convex, the lower concave, the apical margin truncated, arcuated, or more or less emarginated, the lateral angles sometimes subacute; above, there is a transverse yellow spot, sometimes covering the entire surface, sometimes much reduced, sometimes there is a yellow spot beneath; lateral lobes sometimes with a yellow spot on each extreme side, and an apical fringe of palish pubescence; mandibles black or piceous-black, more

or less yellowish at base, sometimes obsoletely so; antennæ black, the flagellum piceous, paler beneath, especially at base and apex, the scape often with a yellowish line in front. Thorax deeply and closely punctured; a spot on each side of the prothorax above, sometimes wanting, a transverse line on postscutellum, and sometimes a spot on each side of the metathorax, yellow; metathorax coarsely punctured or subrugose, the triangular space at base longitudinally, or slightly obliquely striated, the tip of this space has sometimes a few very fine transverse striæ; tegulæ testaceous, sometimes dusky, with a large yellowish spot above or in front. Wings smoky-hyaline, with a more or less deep violaceous reflection, the marginal cell and apex fuliginous; sometimes the wings have a brassy reflection. Legs black; tips of the femora testaceous, sometimes fuscous; sometimes the posterior pair vary from almost entirely yellow to almost entirely black, generally the apical half is dull testaceous or yellowish-fuscous; in one specimen the intermediate femora are entirely honey-yellow, except their extreme base; the tibiæ are yellow, sometimes tinged with fulvous, the posterior pair are fuscous at tip within; tarsi testaceous, the posterior pair entirely dusky or blackish. Abdomen closely and rather deeply punctured, the segments strongly constricted at base; first segment with a yellow spot on each side, sometimes reduced to a dot; second segment with a broad subapical yellow band, more or less narrowed in the middle anteriorly; the three following segments each with a continuous, narrow, subapical, yellow band, broader laterally, sometimes the band on the fifth segment is nearly as broad as that on the second, and similarly shaped; ventral segments with the apical half somewhat prominent and subrugose, the basal half smooth and sometimes piceous or testaceous. Length $5\frac{1}{2}$ —7 lines; expanse of wings $9\frac{1}{2}$ —11 lines.

Male.—Differs by the face being entirely yellow; the antennæ longer, the scape always yellow in front, and the flagellum mostly dusky fulvous or testaceous beneath; the clypeus flat and covered with sparse punctures; one specimen only, has a transverse yellow line on the scutellum similar to that on the postscutellum, and the metathorax has a yellow spot on each side; the under side of the coxæ, trochanters and femora more or less, yellow; the femora above, except extreme tips (which are fulvous), and the apical half of the posterior pair beneath, black, sometimes the latter have the basal half yellow; tibiæ and tarsi much as in the female, but more yellowish, with the tips of the posterior tibiæ more or less dusky or blackish, sometimes the entirely upper surface is dusky, and the base of their tarsi pale; the

basal segment of the abdomen is generally immaculate, rarely with two yellow spots as in the female; the band on the second segment is generally of equal breadth, sometimes slightly narrowed on the anterior middle; the subapical fasciæ on the remaining segments are very narrow, widening a little on each side, and sometimes slightly interrupted in the middle, generally on the sixth segment, which has sometimes an ovate spot on each side; the second, third and fourth ventral segments have sometimes a small yellow spot on each side, sometimes reduced to a mere dot, but generally wanting. Length $4\frac{1}{2}$ —6 lines; expanse of wings $7\frac{1}{2}$ — $9\frac{1}{2}$ lines.

Hab.—Massachusetts (Ridings, Stratton); New York (Angus); N. Jersey, Pennsylvania (Cresson); Delaware (Dr. Wilson); Virginia (Ridings); Illinois (Kennicott and Walsh). Coll. Ent. Soc. Philad. and Chicago Academy of Sciences.

Eleven ♀, twenty-one ♂ specimens. In the female the clypeus varies much in shape, being more or less produced, sometimes subporrect and elongate-quadrate, with the concave under surface hid from view; while in other specimens the projection is very short, with the entire under side visible; the apical margin varies from truncate and arcuate, to deeply emarginate, the lateral angles forming subacute teeth.

3. *Cerceris venator*, n. sp.

Black; face, interrupted line on collar, line on postscutellum, broad band on second abdominal segment, more or less emarginated on anterior middle, and narrow apical margins of remaining segments, yellow; legs fulvous and yellow; wings subhyaline, apical margins fuscous.

Male.—Black, rather closely and deeply punctured, clothed with a golden-yellow pubescence, much paler and somewhat whitish on the pleura, metathorax and abdomen; the face entirely, basal half of mandibles, spot on the scape of antennæ in front, interrupted line on the collar, transverse line on postscutellum, and tegulæ, yellow; antennæ black, tinged more or less with ferruginous at base, the apical joint curved, and truncate at tip; the triangular enclosed space of the metathorax, smooth and shining, with a finely impressed line down the middle. Wings subhyaline, slightly tinged with honey-yellow, and with a more or less brilliant violaceous reflection; apical margins fuscous; nervures honey-yellow. Legs fulvous; anterior coxæ, trochanters and femora beneath except tips, and the four posterior femora at base within, more or less black; the anterior tibiæ and tarsi more or less, the four posterior coxæ and trochanters beneath, base of the posterior femora, the intermediate tibiæ and tarsi, a line on the posterior tibiæ beneath, sometimes wanting, and their tarsi, yellow; tips of tarsi

dusky. Abdomen: basal segment generally black, immaculate, sometimes wholly or in part ferruginous, as well as spots on extreme sides of the remaining segments; second segment with a broad, apical, yellow band, rounded on each side anteriorly and more or less deeply emarginated in the middle; the four following segments each with a narrow apical yellow fascia, sometimes a little dilated on the sides; apical segment flattened, sparsely and deeply punctured, subtruncate at tip, and with a lateral tuft of dense golden pubescence; in one specimen the upper surface of this segment is fulvous, and the four posterior femora not stained with black within; venter generally black, sometimes more or less stained with fulvous. Length 8 lines; expanse of wings $12\frac{1}{2}$ lines.

Hab.—New York (Angus); New Jersey, Pennsylvania (Cresson); Illinois (Dr. Lewis); Kansas (Dr. Wilson); Louisiana (Kennicott). Coll. Ent. Soc. Philad. and Chicago Academy of Sciences.

Ten ♂ specimens; ♀ unknown. A large well marked species, with the ornamentation of the thorax and abdomen somewhat similar to that of *C. clypeata* ♀.

4. *Cerceris bicornuta*, Guér.

Cerceris bicornuta, Guér., Icon. Rêg. Anim. p. 443; Smith, Brit. Mus. Cat. Hym. iv, p. 466.

Black, often more or less varied with ferruginous; orbits, postscutellum and band or two spots on first and second abdominal segments, yellow; legs fulvous; wings fuscous.

Femule.—Black, deeply and rather closely punctured, clothed with a short golden pubescence, whitish on the metathorax; most of the cheeks and occiput, clypeus, and mandibles except tips, ferruginous; the frontal orbits more or less obscure yellowish, as well as the cariniform process between the antennæ; middle lobe of the clypeus lunate, not very prominent, the lower half concave and polished, the angles of the lunate projection short and subacute, apical margin of the clypeus uneven; sometimes the base of the mandibles is more or less yellow; antennæ ferruginous, black at tips, sometimes the flagellum is almost entirely black. Thorax: a band on the collar, often interrupted, and sometimes very indistinct, the scutellum, a large spot on each side of metathorax, and the tegulæ ferruginous; sometimes the scutellum and metathorax are entirely black; postscutellum yellow in all the specimens before me; the triangular basal space of the metathorax deeply punctured on the sides, always black. Wings fuscous, rather darker on the apical margins, with a violaceous reflection; nervures black. Legs fulvo-ferruginous, sometimes black at base; posterior tibiæ more

or less yellow exteriorly. Abdomen with the segments strongly contracted at base, either black or ferruginous; first segment more transverse than usual, with a yellow spot on each side, sometimes large and nearly confluent, sometimes reduced to a dot; second segment with a large yellow mark on each side, also sometimes nearly confluent, and sometimes reduced to an elongate oblique spot; remaining segments either entirely black, fuscous, or ferruginous with the incisures black, and sometimes the basal middle of the segments stained with blackish; the venter black, sometimes ferruginous banded with black. Length $8\frac{1}{2}$ — $9\frac{1}{2}$ lines; expanse of wings 12 — $14\frac{1}{2}$ lines.

Hab.—New York (Angus); New Jersey and Pennsylvania (Cresson); "Delaware, Georgia" (Smith); Louisiana (Kennicott). Coll. Ent. Soc. Philad. and Chicago Academy of Sciences.

Six ♀ specimens; ♂ unknown. This is a fine large species, exceedingly variable in coloration.

5. *Cerceris biangulata*, n. sp.

Black; sides of the face, two spots on prothorax, tegulae, postscutellum, sides of metathorax, and the five basal segments of abdomen above, except a ferruginous stain at base, yellow; clypeus with a large acutely lunate projection proceeding from its base; wings hyaline, fuscous at tips.

Female.—Black, closely and rather finely punctured, sparsely clothed with a pale pubescence; clypeus with a large acutely lunate process, proceeding from its base, like two claws diverging from each other, and connected at their bases; sides of the face, the clypeal projection, except its lateral and apical margins, base of the mandibles, a spot behind the summit of the eyes, and the scape of the antennae in front, rather obscure yellowish; margins of the clypeal projection, its under surface, the cheeks, and the basal half of the antennae, ferruginous; the vertex, immediately behind the ocelli, has a few obsolete ferruginous dots. Thorax: two transverse spots on the collar, a small spot beneath the anterior wing, tegulae, postscutellum, and a very large subtriangular mark on each side of the metathorax, yellow; the scutellum is tinged with obscure ferruginous; the triangular basal space of the metathorax is finely striated longitudinally; wings obscure hyaline, with a slight purplish iridescence, the costal and apical margins narrowly fuscous, darker on the apex of the anterior pair; nervures ferruginous. Legs fulvo-ferruginous; tips of the four anterior femora, especially within, and the posterior pair exteriorly, as well as most of all the tibiae, yellow. Abdomen yellow, the segments strongly contracted at base, with a basal pale ferruginous stain, broader on the anterior segments, that on the basal segment separating the yellow into

two large semicircular spots, that on the second segment large and triangular, on the remaining segments this stain becomes narrower, and slightly blackish at extreme base; the sutures also blackish; apical segment ferruginous, black at base and apex; venter fulvo-ferruginous, with a black band at the base of the third, fourth and fifth segments. Length 7 lines; expanse of wings $12\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

One ♀ specimen; ♂ unknown. This beautiful species is at once recognized by the large and singular projection of the clypeus, as well as by the handsome ornamentation. Answers somewhat to the description of *C. bidentata* Say, but not enough to warrant their identity certain.

6. *Cerceris sexta*, Say.

Cerceris sexta, Say, Bost. Journ. Nat. Hist. i, p. 382.

Black; face, two spots on collar, tegulæ, postscutellum, spot on each side of metathorax, and broad bands on abdomen, yellow; legs yellow and fulvous; wings subhyaline.

Male.—Black, closely punctured, clothed with a thin pale yellowish pubescence; face entirely, mandibles except tips, a dot behind the eyes near their summit, sometimes wanting, and the scape in front, yellow, sometimes whitish; basal half of antennæ bright ferruginous, the remainder black. Thorax: two large transverse spots on prothorax, tegulæ, postscutellum, and an ovate spot on each side of the metathorax, sometimes reduced to a dot, yellow; sometimes the scutellum is faintly tinged with brownish; the triangular basal space of the metathorax shining, with slightly oblique striæ on the sides and a well-impressed longitudinal one in the middle. Wings tinged, more or less, with fuscous, the tip and apical margins darker, covering the marginal cell; nervures pale ferruginous, the stigma yellowish. Legs bright yellow, the four anterior femora behind, except tips, the apical half of the posterior femora, their tibiæ and tarsi within and above, fulvous; base of the four anterior femora beneath and the posterior pair within, black. Abdomen more elongate and rather narrower than usual, with the segments strongly contracted at base; the basal segment subglobose, either black or ferruginous, with a large or small yellow spot on each side; the five following segments with a more or less broad, continuous subapical, bright yellow band, slightly narrowed on the middle anteriorly, where the bands are sometimes obsoletely margined with obscure ferruginous; beneath sometimes stained with ferruginous, the second to fifth segments each with a more or less de-

veloped lateral yellow spot, sometimes almost confluent on the disk. Length $6\frac{1}{2}$ —8 lines; expanse of wings 11— $12\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Six ♂ specimens; ♀ unknown. May possibly be the male of the preceding species.

7. *Cerceris vicina*, n. sp.

Black; sides of face, clypeus, scape of antennæ in front, two spots on collar, tegulæ, line on postscutellum, two spots on metathorax, sometimes wanting, and broad bands on abdomen, yellow; legs mostly honey-yellow; wings fuscous.

Female.—Black, closely and deeply punctured, sparsely clothed with pale pubescence; clypeus scarcely prominent except at tip which is somewhat produced and subtruncate; sides of the face broadly, clypeus except apical margin, base of mandibles, sometimes a dot above the clypeus, a dot behind the summit of the eyes, and the scape in front, lemon-yellow; sometimes the lateral lobes of the clypeus are blackish with a yellow spot on each; antennæ fulvous, blackish at tips above. Thorax: collar tinged more or less with ferruginous, a transverse spot on each side, tegulæ, postscutellum, and a more or less developed elongate-ovate spot on each side of the metathorax, wanting in one specimen, yellow; triangular basal space of metathorax opaque, and covered with dense elongate striæ. Wings yellowish-fuscous, darker on apical margins and marginal cell, and with a violaceous reflection. Legs honey-yellow, tips of the four anterior femora, their tibiæ and most of their tarsi, the posterior femora beneath, and their tibiæ and tarsi exteriorly, yellow. Abdomen: first segment more or less ferruginous in two specimens, in one immaculate, in the other with a lateral yellow spot, and in the third specimen black with a broad, slightly interrupted yellow band; second segment with a very broad yellow band, leaving only the basal margin of the segment black; the three following segments each with an apical yellow band, broad on the sides and much narrower on the middle anteriorly, that on the fifth segment the broadest; apical segment more or less ferruginous. venter banded with fulvo-ferruginous. Length $5\frac{1}{2}$ lines; expanse of wings $10\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

Three ♀ specimens; ♂ unknown. Closely related to the preceding species, but smaller.

8. *Cerceris rufinoda*, n. sp.

Black; face, two spots on collar, tegulæ, spot under the wing, two spots on scutellum, tips of femora, tibiæ and tarsi, and bands on second and four following segments of abdomen, yellow; basal segment rufous; wings dusky.

Male.—Black, closely and rather deeply punctured; the face entirely, extending up on each side nearly to the summit of the eyes, a narrow line between the antennæ, mandibles except tips and the scape in front, lemon-yellow; antennæ fulvous, the flagellum dusky above, the scape above, and basal joint of flagellum, blackish. Thorax: an interrupted band on the collar, tegulæ, a spot beneath the wings, a rounded spot on each side of the scutellum, and a transverse line on the postscutellum, lemon-yellow; the scutellum sparsely punctured; the triangular basal space of the metathorax transversely striated at tip, with a central longitudinal impressed line. Wings tinged with fuscous, nervures fuscous. Legs: coxæ, trochanters, and most of the femora, black; tips of all the femora, especially the two anterior pairs beneath, all the tibiæ, except the tips of the posterior pair, and base of the tarsi, lemon-yellow; posterior femora ferruginous at base; most of the tarsi dusky. Abdomen closely and rather coarsely punctured, the segments strongly contracted at base; first segment entirely and the base of the second, bright rufo-ferruginous, the latter with a broad, subapical, lemon-yellow band narrowly margin before with black; the four following segments each with a narrower apical band of the same color, slightly attenuated on the middle anteriorly; the venter piceous-black, ferruginous at base. Length 4 lines; expanse of wings $6\frac{1}{2}$ lines.

Hab.—Rocky Mountains, Colorado Territory. (Ridings.) Coll. Ent. Soc. Philad.

One ♂ specimen; ♀ unknown. A handsome little species, with the basal segment entirely red, as well as the base of the second segment.

9. *Cerceris Blakei*, n. sp.

Black; sides of the face, clypeus, mandibles, scape in front, two spots on collar, tegulæ, spot on each side of scutellum, line on postscutellum, tibiæ and tarsi, and apical fasciæ on abdomen, much narrowed on the middle, yellow; two basal segments dull ferruginous; legs mostly fulvous; wings fuscous.

Female.—Black, closely and deeply punctured; sides of the face, clypeus, mandibles except tips, a minute dot behind the summit of the eye, and the scape, yellow; the face silvery in certain lights, especially the lateral lobes of the clypeus; above the clypeus a pale ferruginous dot; clypeus produced in the middle, convex above, concave beneath, the apical margin subtruncate and narrowly margined with black; fla-

gellum of the antennæ fulvous, dusky above. Thorax : a transverse spot on each side of the collar, tegulæ, a dot on each extreme side of the scutellum, and a transverse line on the postscutellum, yellowish ; metathorax coarsely punctured, the triangular basal space rugose, with a deep channel down the middle. Wings pale fuscous, darker at tips, with a slight violaceous reflection ; nervures and stigma blackish. Legs black at base, the femora fulvous, with more or less yellow at tips ; tibiæ yellow, the posterior pair at tips, as well as the tarsi, fulvous. Abdomen with the segments strongly contracted at base, densely and deeply punctured, the two basal segments dull ferruginous, with an apical yellowish band, that on the second broad and much narrowed on the middle anteriorly ; the three following segments each with a yellowish band similar to that on the second segment ; venter brownish, paler at base. Length 4 lines ; expanse of wings 7 lines.

Hab.—Georgia. (Blake.) Coll. Ent. Soc. Philad.

One ♀ specimen ; ♂ unknown. This pretty little species was captured this summer, in Southwestern Georgia, by my friend Mr. Charles A. Blake, after whom I have named it.

10. *Cerceris finitima*, n. sp.

Black ; face, scape in front, two spots on collar, tegulæ, a spot on each side of scutellum, postscutellum, tips of femora, and the tibiæ, and bands on abdomen, yellowish ; wings subhyaline.

Female.—Black, deeply and coarsely punctured, slightly pubescent ; the face, mandibles except tips, a dot behind the summit of the eyes, and the scape in front obscure yellowish ; the face silvery in certain lights, especially the sides of the clypeus ; antennæ pale fulvous, dusky above. Thorax : a spot on each side of the collar, tegulæ, a dot beneath the anterior wing, a spot on each side of the scutellum, and a line on the postscutellum, yellowish ; the enclosed basal space of the metathorax transversely striated at tip. Wings subhyaline, dusky at tip ; nervures and stigma pale fuscous. Legs black ; tips of the femora, and the tibiæ, except tips of the posterior pair, yellowish. Abdomen : first segment with a subinterrupted band at tip ; the four following segments with a continuous, yellowish, apical band, narrowed in the middle, and broadest on the second segment ; venter black, shining, immaculate. Length $3\frac{1}{2}$ lines ; expanse of wings $5\frac{1}{4}$ lines.

Hab.—Illinois. (Dr. Lewis.) Coll. Ent. Soc. Philad.

One ♀ specimen ; ♂ unknown. Closely allied to *C. Blakei* nob., but has no ferruginous color whatever on the legs and abdomen, so conspicuous in the latter species.

11. *Cerceris flavocostalis*, Cresson,*Cerceris flavocostalis*, Cresson, Proc. Ent. Soc. Phil. iv, p. 153.*Hab.*—Cuba. Coll. Dr. John Gundlach. Two (♂ ♀) specimens.

As this and the four following species have already been described on the pages of these "Proceedings," I deem it useless to repeat them here, and therefore merely give reference.

12. *Cerceris triangulata*, Cresson.*Cerceris triangulata*, Cresson, Proc. Ent. Soc. Phil. iv, p. 154.

Hab.—Cuba. Coll. Dr. John Gundlach. One ♂ specimen; ♀ unknown.

13. *Cerceris bilunata*, Cresson.*Cerceris bilunata*, Cresson, Proc. Ent. Soc. Phil. iv, p. 155.

Hab.—Cuba. Coll. Ent. Soc. Philad. Two ♂ specimens; ♀ unknown.

14. *Cerceris festiva*, Cresson.*Cerceris festiva*, Cresson, Proc. Ent. Soc. Phil. iv, p. 156.

Hab.—Cuba. Coll. Dr. John Gundlach. One ♂ specimen; ♀ unknown.

15. *Cerceris cubensis*, n. sp.*Cerceris zonata*, Cresson, Proc. Ent. Soc. Phil. iv, p. 156.*Hab.*—Cuba. Coll. Ent. Soc. Philad. One ♀, two ♂ specimens.

As Mr. Smith had previously described a species from China under the name of *C. zonalis*, and to prevent confusion, I take this opportunity of changing the name of the Cuban species.

16. *Cerceris nigrescens*, Smith.*Cerceris nigrescens*, Smith, Brit. Mus. Cat. Hym. iv. p. 466, ♀.

Black; sides of face, clypeus, base of mandibles, dot behind the eyes, two spots on collar, tegulæ, postscutellum, spot on each side of metathorax, and bands on abdomen, whitish; wings subhyaline; the four anterior tibiæ and tarsi mostly pale yellowish.

Female.—Deep black, not closely punctured, sparsely clothed with pale pubescence; sides of the face, clypeus, base of mandibles, a dot behind the summit of the eyes, and sometimes a longitudinal line above the clypeus, white or pale yellowish-white; middle lobe of the clypeus quadrate, elevated, convex above and concave beneath, the anterior margin subtruncate or slightly emarginated, and narrowly bordered with black; the lateral lobes sometimes black, with a pale yellowish spot on each; antennæ black, the flagellum more or less fulvo-testaceous beneath, especially at base, and in one specimen the scape has a white line in front. Thorax: a transverse spot on each side of the collar, a spot on the tegulæ, a transverse line on the postscutellum, and a rounded spot on each side of the metathorax, whitish or yellowish-

white; the enclosed basal space of the metathorax covered with dense longitudinal striæ, and a deeper one down the middle. Wings subhyaline, darker on the apical margins and in the marginal cell; nervures fusco-ferruginous. Legs black; extreme tips of the four anterior femora, their tibiæ in front, and a line on the posterior tibiæ beneath, yellowish; the anterior tarsi pale ferruginous, the posterior pair dusky. Abdomen: the basal segment with a transverse yellowish-white spot on each side at tip, the four following segments each with an uninterrupted subapical fascia, narrowed in the middle anteriorly; beneath entirely black. Length 5—5½ lines; expanse of wings 8—8½ lines.

Variety ♀.—The antennæ, collar and metathorax immaculate; the fasciæ on the abdomen very narrow, and uninterrupted on the fifth segment.

Hab.—Canada West (Saunders); Rocky Mountains, Colorado Territory (Ridings); "Nova Scotia" (Smith). Coll. Ent. Soc. Philad.

Three ♀ specimens; ♂ unknown.

17. *Ceroeris dentifrons*, n. sp.

Black; sides of face, base of mandibles, two spots on collar, postscutellum, tibiæ, and narrow fasciæ on abdomen, yellow; clypeus with a large, acutely lunate projection; wings subhyaline, dusky at tips.

Female.—Deep black, strongly punctured, slightly pubescent; the clypeus with a large acutely lunate projection, proceeding from its base, and shaped like that of *C. biungulata* described above; sides of the face, two dots on clypeal projection, confluent in one specimen and wanting in another, and the base of the mandibles, yellow; antennæ black, the flagellum fulvo-testaceous beneath. Thorax: a transverse spot or dot on each side of the collar, spot on tegulæ, and the postscutellum, yellow; mesothorax and scutellum sparsely punctured; the enclosed triangular space at the base of metathorax longitudinally striated. Wings subhyaline, faintly violaceous, the apical margins and marginal cell, pale fuliginous; nervures dull ferruginous, the stigma paler. Legs: coxæ, trochanters and femora except tips, black; tips of femora, the tibiæ within, and the four anterior tarsi, fulvous; tibiæ yellow exteriorly; tips of the posterior tibiæ and their tarsi, dusky. Abdomen with a narrow subapical fascia on each segment, except the last, slightly narrowed in the middle anteriorly, a little interrupted on the first segment, and rather broadest on the second; beneath black, immaculate. Length 4½—5 lines; expanse of wings 7—8 lines.

Hab.—New York (Angus); Illinois (Dr. Lewis). Coll. Ent. Soc. Philad.

Three ♀ specimens; ♂ unknown. Closely resembles the preceding species in ornamentation; but readily distinguished by the very prominent, bidentate projection of the clypeus. This species may possibly prove to be the ♀ of *C. deserta* Say.

18. *Cerceris deserta*, Say.

Cerceris deserta, Say, Long's Second Expedition, ii, p. 343, ♂.

Black, finely punctured; face, scape in front, two spots on collar, tegulæ, postscutellum, most of legs, and narrow bands on abdomen, yellow; wings fusco-hyaline.

Male.—Black, rather finely and sparsely punctured, especially the abdomen, thinly pubescent; the face entirely, mandibles except tips, and the scape in front, bright yellow; antennæ dusky above, black at base, the flagellum fulvous beneath. Thorax: the mesothorax and scutellum sparsely punctured; a spot on each side of the collar, sometimes much reduced, spot on tegulæ, and a transverse line on the postscutellum, yellow; the basal enclosed space of the metathorax channelled down the middle, with a few oblique striæ on each side. Wings fusco-hyaline, slightly violaceous, darker at tips; nervures pale ferruginous. Legs yellow; the four anterior femora behind, apical half of the posterior pair, as well as the tips of their tibiæ, black, their tarsi dusky. Abdomen rather feebly and sparsely punctured, the segments convex, and rather strongly contracted at base; the basal segment generally, but not always, with a yellow spot or dot on each side; the five following segments each with a narrow, continuous, subapical, yellow fascia, more or less narrowed in the middle and rather the broadest on the anterior segments; beneath, the second to fifth segments have generally a yellow transverse spot or dot on each side. Length 4½ lines; expanse of wings 8 lines.

Hab.—Massachusetts (Ridings); Pennsylvania (Cresson); Delaware (Dr. Wilson); Illinois (Dr. Lewis). Coll. Ent. Soc. Philad.

Eight ♂ specimens; ♀ unknown.

19. *Cerceris imitator*, n. sp.

This species differs from *C. deserta* principally in the punctuation being much closer, deeper and coarser; the size is smaller, the enclosed basal space of the metathorax is longitudinally striated, the posterior femora and tibiæ have always a larger proportion of the black color, and the basal segment of the abdomen, and the venter, are immaculate. Length 4 lines; expanse of wings 7 lines.

Hab.—Illinois (Dr. Lewis). Coll. Ent. Soc. Philad.

Eight ♂ specimens; ♀ unknown. This is, no doubt, the var. β of Say's *deserta*, and is at once distinguished from that species by the coarse sculpture.

20. *Cerceris compar*, n. sp.

Black; face, scape in front, interrupted line on collar, another on scutellum, most of legs, and narrow bands on abdomen, yellow; wings subhyaline.

Male.—Black, deeply and closely punctured; the face entirely, the mandibles more or less and the scape in front, yellow; rest of antennæ black above, fulvous beneath. Thorax: a line on the collar, interrupted in the middle, sometimes widely, a spot on the tegulæ, a slightly interrupted line on the scutellum, and sometimes a longitudinal line on each side of the metathorax, pale yellowish, the basal enclosed space of the latter channelled down the middle with a few deep punctures on each side. Wings subhyaline, the apical margin and marginal cell pale fuscous; nervures pale ferruginous. Legs black; the coxæ, trochanters, tips of the four anterior femora, their tibiæ and tarsi, basal two-thirds of the posterior tibiæ and the base of their tarsi, yellow. Abdomen convex, strongly punctured; each segment, except the last, with a very narrow, continuous, subapical, yellow fascia, scarcely broader on the sides; venter black, shining, immaculate. Length $3\frac{1}{2}$ — $4\frac{1}{2}$ lines; expanse of wings 6—8 lines.

Hab.—Illinois. (Dr. Lewis.) Coll. Ent. Soc. Philad.

Three ♂ specimens; ♀ unknown. Resembles the preceding species, but is more compact, with the posterior femora entirely black, and the basal segment of the abdomen with a narrow continuous fascia similar to those on the following segments.

21. *Cerceris fulvipes*, n. sp.

Black; spots on face, two on collar, tegulæ, line on postscutellum, two spots on metathorax, and bands on abdomen, yellowish-white; legs fulvous, wings subhyaline.

Female.—Black, somewhat shining, thinly clothed with a pale pubescence; head closely punctured; a subtriangular mark on each side of the face, a small spot on the clypeus, emarginate before, mandibles except tips, and a spot behind the eyes near the summit, obscure whitish; antennæ black, the flagellum fulvous beneath. Thorax more sparsely punctured, elongate and somewhat confluent on the mesothorax, very sparse on the scutellum; spot on each side of the collar, tegulæ, postscutellum, and an ovate spot on each side of the metathorax, yellowish-white; the enclosed basal space of the latter finely and somewhat obliquely striated. Wings subhyaline, slightly tinged with yellowish, faintly iridescent, apex fuscous; nervures pale ferruginous. Legs fulvous; the coxæ and anterior femora behind, blackish; the tibiæ tinged with yellow exteriorly. Abdomen rather sparsely punctured; first segment with a yellowish-white spot on each side, and a continuous, apical band of the same color on the four following segments.

more or less narrowed in the middle; beneath, the second to fifth segments with a lateral yellowish-white spot, the second segment stained with ferruginous in one specimen. Length $4-4\frac{1}{2}$ lines; expanse of wings $6\frac{1}{2}-7\frac{1}{2}$ lines.

Hub.—Dela. (Dr. Wilson); Ill. (Dr. Lewis). Coll. Ent. Soc. Philad.

Two ♀ specimens; ♀ unknown. A very pretty and distinct species, closely allied to *C. nigrescens* in general ornamentation, but is distinguished at once from that species by the fulvous legs.

22. *Ceroeris compacta*, n. sp.

Robust, black; face, mandibles, scape in front, two spots on collar, two on scutellum, tegulæ, postscutellum, tibiae and bands on second and following segments of abdomen, broadest on the second, yellow; femora fulvous; wings subhyaline; face silvery in ♀.

Female.—Robust, black, closely and strongly punctured, thinly clothed with a pale pubescence; face silvery, especially, on each side of the clypeus; face, a line beneath antennæ, clypeus, mandibles except tips, a spot behind the summit of eyes, and scape in front, yellow; middle of clypeus prominent, convex above, flattened and dusky beneath, which has an ovate, oblique space on each side; antennæ blackish, the flagellum fulvous beneath. Thorax: a transverse spot on each side of the collar, tegulæ, a spot on each side of the scutellum, the postscutellum, and in one specimen an obscure spot on each side of the metathorax, yellowish, the enclosed basal space of the latter coarsely and obliquely striated. Wings subhyaline, with a brassy sub-iridescent reflection, the costo-apical and apical margins fuscous, nervures dull ferruginous. Legs black at base, the femora fulvous, their tips more or less, the tibiæ and base of the tarsi yellow, tips of posterior tibiæ within dusky as well as most of the posterior tarsi. Abdomen robust, the basal segment unusually small, and immaculate; second segment with a broad, continuous, apical, yellow band; the three following segments each with a narrow apical yellow fascia, much dilated on the sides; beneath black, immaculate. Length $4\frac{1}{2}-5$ lines; expanse of wings $7-8\frac{1}{2}$ lines.

Male.—Resembles the female, with the face flat, of a brighter yellow, the spot behind the eyes wanting, the lateral spots of the scutellum subobsolete, the fasciæ on the third and three following segments less dilated on the sides, and the venter is narrowly banded with testaceous. Length $4-4\frac{1}{2}$ lines.

Hub.—Pennsylvania (Cresson); Delaware (Dr. Wilson); Illinois (Dr. Lewis and Mr. Kennicott). Coll. Ent. Soc. Philad., and Chicago Academy of Sciences.

Four ♀; two ♂ specimens. This is much more robust in proportion to the size, than any of the other species, and the abdomen is more contracted at base.

23. *Ceroeris californica*, n. sp.

Black; face, two spots on collar, spot on tegulæ, tibiæ and bands on abdomen much attenuated in the middle, yellow; wings subhyaline, the costa fuscous; face silvery.

Male.—Robust, black, deeply and rather closely punctured, subsericeous, thinly clothed with a pale yellowish pubescence; the face entirely pale yellow, clothed with a short silvery pubescence; mandibles black; antennæ black above, fulvous beneath, the apical joint subconical, a little curved and tipped with fulvous. Thorax sparsely punctured above, immaculate, except an ovate dull yellowish spot on each side of the collar, and two very obscure ones of the same color on post-scutellum; enclosed basal space of the metathorax smooth and polished; tegulæ fulvous with a yellow spot. Wings hyaline, with a brilliant violaceous reflection especially at tips; the costa, beyond the stigma, broadly fuscous, as well as the apical margins faintly; nervures ferruginous. Legs brownish at base, the four anterior femora ferruginous, the posterior pair rufo-piceous; tibiæ and base of tarsi yellow; tips of posterior tibiæ and most of the tarsi fuscous. Abdomen robust, subsericeous, the first segment unusually small, globose and tinged with dull ferruginous at tip; the second and three following segments each with a narrow, apical, yellow fascia, much dilated on each side, the sixth segment with a broad yellow band, the anterior middle slightly emarginated; beneath black, immaculate. Length $5\frac{1}{2}$ lines; expanse of wings 9 lines.

Hab.—California. (Mr. Henry Ulke.) Coll. Ent. Soc. Philad.

One ♂ specimen; ♀ unknown.

24. *Ceroeris Kennicottii*, n. sp.

Black; sides of face, clypeus, scape in front, interrupted line on collar, tegulæ, a broad line on scutellum, tibiæ, broad band on second abdominal segment, transverse spot on each side of third, and narrow bands on three following segments, yellow; wings subhyaline, the costa fuscous.

Male.—Black, coarsely punctured, finely pubescent, silvery on the clypeus; sides of the face, middle lobe of the clypeus, and the scape in front, yellow; antennæ black, the flagellum fulvous beneath. Thorax: a line on the collar, interrupted in the middle, tegulæ, and a broad transverse line on the scutellum, yellow; the enclosed basal space of the metathorax shining, with a deep channel down the middle. Wings dusky, with a violaceous reflection, the costa fuliginous; nervures fuscous. Legs black; tips of the femora, the tibiæ and tarsi,

yellow; tips of the posterior tibiæ and their tarsi, fuscous. Abdomen much contracted at base, the first segment small and globose, immaculate, except a fulvous dot on the apical middle; second segment with a broad, continuous, yellow band; third segment with a short transverse yellow line on each extreme side; the three following segments with a narrow subapical yellow band; venter black, obsoletely banded with obscure testaceous. Length $3\frac{1}{2}$ lines; expanse of wings 6 lines.

Hab.—Louisiana. (Mr. Robert Kennicott.) Coll. Ent. Soc. Philad.

One ♂ specimen; ♀ unknown.

25. *Cerceris insolita*, n. sp.

Black; face, scape in front, two spots on collar, band on scutellum, tegulæ, most of legs, and bands on abdominal segments except the second and last, yellow; wings hyaline, costa fuliginous.

Male.—Black, closely and deeply punctured, thinly clothed with an erect, palish pubescence; the face entirely, middle of mandibles, and the scape in front, yellow; antennæ blackish, fulvous at base and beneath. Thorax: a transverse spot on each side of the collar, tegulæ, broad transverse line on the scutellum, and a subobsolete dot on each side of the metathorax, yellow; the postscutellum and basal space of the metathorax, almost impunctate, shining. Wings hyaline, iridescent, with the apical half of the costa fuliginous; nervures fusco-ferruginous. Legs yellow; the four anterior femora behind, except tips, blackish, posterior pair ferruginous, tips of their tibiæ and tarsi fuscous. Abdomen with a broad, continuous, yellow band on each of the first and second segments; the fourth and two following segments have each a very narrow, subapical, yellow fascia; beneath, the third segment has a narrow yellow band, and the two following segments a lateral spot. Length 4 lines; expanse of wings $6\frac{1}{2}$ lines.

Hab.—Illinois, (Dr. Samuel Lewis.) Coll. Ent. Soc. Philad.

One ♂ specimen; ♀ unknown. Resembles the preceding but distinct by the yellow face, the color of the legs, and the immaculate second abdominal segment.

The following species are unknown to me:—

26. *Cerceris frontata*, Say.

Cerceris frontata, Say, West. Quar. Rep. ii, p. 80, ♀.

“Nasus elevated; body pale rufous; tergum yellow with rufous incisions.

“Inhabits Arkansa.

“Body pale rufous; antennæ and mandibles black at tip; front pale yellow; nasus elevated at tip from the clypeus, widely emarginated

and densely ciliated on the anterior edge, lobes acute; clypeus four-toothed at tip; wings dusky blackish on the posterior margin; wing-scale and double line on the scutellum yellow; tergum yellow; incisures reddish-brown.

"Length of the body nine-tenths of an inch.

"The specimen is a female, remarkable by the prominence of the nasal portion of the face, a character which was also pointed out by Latreille, in a species which he called *Cerceris aurita*, which insect he observed to nourish its young, with insects of the Linnean genus *Curculio*."

27. *Cerceris bidentata*, Say.

Cerceris bidentata, Say, West. Quar. Rep. ii, p. 80, ♀.

"Lateral lobes of the clypeus each elevated into a prominent spine: anterior margin of the superior wings dusky.

"Inhabits Arkansa.

"Body pale yellowish; head behind the eyes and above, and base of the antennæ, rufous; antennæ black at tip; front concave, lateral lobes of the clypeus each with a conic prominence perpendicular to the surface; mandibles black at tip; thorax rufous on the principal segment; superior wings blackish on the anterior margin, the costal nerve tinged with yellowish in the middle: tergum incisures reddish-brown; segments each with a transverse groove on the middle.

"Length less than three-fifths of an inch.

"In general color, very much resembles the preceding species, from which it may be distinguished by its much smaller size, and by the two remarkable spines or tubercles situated on the lateral lobes of the clypeus. The specimen is also a female."

28. *Cerceris verticalis*, Smith.

Cerceris verticalis, Smith, Brit. Mus. Cat. Hym. iv, p. 466.

"*Female*. Length 6 lines.—Black, thickly punctured; the head ferruginous behind the eyes; the scape and second joint of the flagellum ferruginous; the face below the antennæ yellow; the margins of the clypeus black; the mandibles ferruginous, their extreme base yellow. Thorax: the collar yellow, interrupted in the middle by a ferruginous spot, the post-scutellum and a spot on the tegulæ yellow; a large ferruginous blotch on each side of the metathorax; the wings smoky-hyaline; the legs ferruginous. Abdomen: the basal segment ferruginous, with a minute yellow spot on each side; the second segment yellow, with the basal margin and a produced quadrate spot in the middle ferruginous; the margins of the following segments with

a narrow band which is widened at the sides; beneath, rufo-piceous, brightest at the base.

"*Hab.*—Georgia."

29. *Cerceris elegans*, Smith.

Cerceris elegans, Smith, Brit. Mus. Cat. Hym. iv, p. 467.

"*Male.* Length 3 lines.—Black, coarsely punctured; the face below the antennæ, the scape in front, and the mandibles, yellow, the tips of the mandibles ferruginous; the anterior margin of the clypeus rounded; the anterior angles of the face produced into small quadrate lobes; the flagellum and scape behind ferruginous. Thorax: a spot on each side of the collar and the tegulæ in front yellow; wings smoky-hyaline and beautifully iridescent; the legs yellow, with the coxæ and the femora at their base more or less rufo-piceous; the metathorax very coarsely rugose. Abdomen: the two basal segments ferruginous, the apical margin of the second segment yellow; an elongate yellow spot on each side of the following segments on their apical margins, the spots widest at the margins of the segments and pointed within.

"*Hab.*—East Florida."

30. *Cerceris rufo-picta*, Smith.

Cerceris rufo-picta, Smith, Brit. Mus. Cat. Hym. iv, p. 467.

"*Male.* Length 4 lines.—Black, coarsely punctured; the face yellow below the antennæ; the anterior margin of the clypeus black, crenulated, and angular; the anterior margin of the face has on each side an angular filament close to the eye; the mandibles yellow, their tips ferruginous; the antennæ ferruginous; the flagellum fuscous above towards the apex, the apex pale. The prothorax, tegulæ, scutellum, postscutellum, with sometimes a spot on each side, and the legs, ferruginous; the wings fusco-hyaline, the apical margins of the anterior wings darkest. Abdomen: the two basal segments ferruginous; the apical margin of the third with a narrow ferruginous band; the fourth and following segments more or less banded at the sides with ferruginous or sometimes with reddish-yellow.

"*Hab.*—East Florida."

31. *Cerceris Dufourii*, Guér.

Cerceris Dufourii, Guér. Icon. Règ. Anim. iii, p. 444.

"Black; front of the head, base of the mandibles, and the first joint of the antennæ in front, yellow. Antennæ black, with the first half fulvous. Two small fulvous spots on the posterior margin of the prothorax; tegulæ and margin of the scutellum, yellow. First segment of the abdomen fulvous; the second fulvous, with a large yellow margin, hollowed out in the middle, and separated from the preceding by

black; the others black, narrowly margined with yellow, and the last segment fulvous, with a black spot on the middle, and ciliated on each side with long golden hairs. Wings slightly tinged with yellowish-brown, with the extremity margined with deeper brown. Legs fulvous, with the external margin of the tibiæ and the tarsi, yellow. Length 16 mill.

“*Hab.*—New Orleans.”

This seems closely allied to *C. venator* nob., and may be identical with it. The legs are, however, somewhat differently colored.

32. *Cerceris lævigata*, Smith.

Cerceris lævigata, Smith, Brit. Mus. Cat. Hym. iv, p. 465.

“*Female.* Length 4 lines.—Black and very delicately punctured; the face, base of the mandibles, and a line behind the eyes, yellow; the flagellum fulvous beneath. Thorax: the collar, tubercles, a spot beneath the wings, the scutellum, and an oblong macula on each side of the postscutellum, yellow; the anterior and intermediate tibiæ, and the posterior pair at their base, yellow; the anterior tarsi yellow, with the apical joints slightly ferruginous, the intermediate and posterior pair fusco-ferruginous; wings slightly colored, with a fuscous cloud on the anterior margin of the superior pair. Abdomen very delicately and sparingly punctured and shining; the first segment with its apical margin yellow, a slight notch in the middle of the band; the second, third and fourth segments with a yellow fascia on their apical margins, very much attenuated in the middle and widened at the sides.

“The male has a yellow band on the first and four following segments.

“*Hab.*—St. Domingo.”

33. *Cerceris Perboscii*, Guér.

Cerceris Perboscii, Guér. Icon. Règ. Anim. iii, p. 444.

“Black; front of the head yellow, with two black circles, one above the other, forming a figure 8. Antennæ black, with the base brown. Two small yellow lines on the posterior margin of the prothorax; tegulæ black, the anterior margin yellow; a small yellow oblique spot on each side of the mesothorax; scutellum yellow, metathorax broadly margined on each side with yellow, and with two oblong spots of the same color on the middle. First and third segments of the abdomen broadly margined behind with yellow. Wings transparent; the anterior half of superior pair, as well as base and tip, obscure brown. Legs black, with the front of the four anterior tibiæ yellow. Length 8 mill.

“*Hab.*—Bay of Campeche.”

NORTH AMERICAN MICRO-LEPIDOPTERA.

BY BRACKENRIDGE CLEMENS, M. D.

(Communicated Aug. 14, 1865.)

TORTRICIDÆ.

STIGMONOTA, Guenée.

Proc. Acad. Nat. Sci., Aug. 1860, p. 351.

Fore-wings with a curved blotch or lunule on the dorsal margin.

The blotch bearing three lines or streaks.....*tristrigana*.The blotch bearing one streak.....*interstinctana*.

Stigmonota tristrigana, n. s.—Fore-wings blackish-brown, costa pale-yellow from near the base of the wing to the tip, with eight blackish, oblique streaks and four bluish metallic spots adjoining the yellowish costal stripe. On the middle of the dorsal margin is a large pale-yellow blotch containing three blackish lines, with a bluish metallic spot above it in the middle of the wing, and a semi-band between it and the hinder margin. Hind wings dark brown.

Coll. Ent. Soc. Philadelphia.—Virginia.

SERICORIS, Treit.

Exartema, Proc. Acad. Nat. Sci., Aug. 1860, p. 356.

The want of a good systematic work and European generic types renders classification in this family a work of much labor. I was not, however, convinced when I described the group *Exartema*, that it would be tenable as a new one; for it was the peculiar outline of the inner margin of the hinder wings, and the appendage attached to them, that chiefly induced me to describe the imagines included under this name as forming a new genus.

Upon a review of the subject. I think there is no doubt of the correctness of the present location of the insects included in this group. I have not enough specimens to determine whether the appendage referred to, is common to all the specimens described, or whether it is sexual or accidental.

It is difficult to tabulate the described species. Individuals not only vary considerably in hue, but species apparently distinct approach each other closely in general color.

Fore wings with a small white spot in the central fascia on the end of the disk.....*mutabilana*.

Fore wings yellowish, or ferruginous with black dashes and brown markings.

Fore wings without a small white spot in the central fascia.

Fore wings reddish-brown; markings pure brown.....*nitidana*.

Fore wings ochreous-brown or dark-brown; central fascia distinct.

- With lustrous metallic dots along the markings.....*coruscana*.
 With whitish spaces succeeding the basal patch and central fascia.....*fasciatana*.
 With ochreous spaces succeeding the patch and fascia.
 Patch and fascia entire, spaces ochreous white.....*instrutana*.
 Patch and fascia triparted, spaces luteous.....*foedana*.
 With costa at base ochreous-white, without distinct pale spaces succeeding fascial patch and central fascia.....*permundana*.
 Fore wings russet-brown; central fascia not distinct.
 Varied with dull leaden stripes towards apex.....*concinna*.
 Fore wings testaceous or brownish testaceous.
 Costa white at base and along hinder border, or nearly uniform testaceous with dull leaden hue.....*versicolorana*.
 Wings nearly concolorous; thorax, costa and spot at basal angle ferruginous.....*inornatana*.
 Fore wings testaceous white.
 Concolorous; thorax, costa, spot at basal angle, ferruginous....*inornatana*.
 With large basal patch and square patch near the tip, ferruginous.....*gratiosana*.

Sericoris coruscana, Clem.

Antithesia? coruscana, Proc. Acad. Nat. Sci., Aug. 1860, p. 346.

Sericoris gratiosana, n. s.—Fore wings testaceous-white, with a ferruginous basal patch, having a nearly straight margin, and a large square patch of the same hue, reaching from the middle of the costa nearly to the tip of the wing and extended into the middle of the wing, with the outer edge extended as a stripe to the middle of the hinder margin. The basal patch is slightly dusted with blackish and the square patch is blackish on its inner edge. At the tip of the wing is a ferruginous dot and between it and the square patch a few geminations.

The testaceous portion of the wing is slightly striated. Thorax and head ferruginous. Hind wings fuscous.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris concinna, n. s.—Fore wings russet or ochreous-brown, much varied with brown dots and markings. The basal patch is dark brown and is well indicated only beneath the middle of the wing and a small spot on the base of the costa, the middle being of the general hue sprinkled with dark brown. The central fascia is indicated on the middle of the costa by a dark testaceous-brown patch and by another of the same hue on the inner margin and is interrupted in the middle of the wing by the general hue. In the apical portion of the wing is an oblique ochreous-brown stripe, extended from the dark patch on the costa to the middle of the inner margin and bordered on each side by a non-lustrous leaden stripe. The space between this oblique stripe and the central fascia is sprinkled with brown and somewhat varied dull leaden streaks. At the tip of the wing is a dark brown spot and the costa is geminated with pale ochreous and dotted with dark brown. Cilia russet, dark brown at tip with three brownish spots in the cilia beneath the tip. Hind wings dark fuscous; cilia pale ochreous.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris mutabilana, n. s.—Fore wings reddish-brown, yellowish or pale-ochreous, with reddish-brown or testaceous-brown markings. The basal patch is angulated and at the base of the wing, shows the general hue. The central fascia is well marked and on its outer edge in the middle of the wing is a *whitish discal dot*. There is a subterminal fascia extending from the costa near the tip to the hinder margin above the anal angle. On the basal patch and central fascia are short black striæ. On each side of the central fascia are spaces, or bands of the general hue, each having a dark brownish line running its middle. The costa is spotted with blackish and geminated with yellowish or pale ochreous.

In the reddish-brown specimen or variety, the pale interspaces are ochreous on the costa and beneath it, are discolored with reddish.

It is scarcely possible, with the specimens before me to distinguish the species from the variety, and I therefore forbear to make a conjecture. The description has been written so as to include all the variations of hue.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris instrutana, n. s.

This specimen may be a mere variation of *fasciatana*. The ornamentation of the wings is very similar, as well as the color, but the size of the specimen is much less.

The whitish spaces on each side of the central fascia is more tinted with ochreous than in *fasciatana*. The outer margin of the basal patch shows two indentations and a central tooth or projection, while in *fasciatana* the outer margin is nearly straight or slightly curved. The central fascia is very narrow on the costa, dilating in the middle of the wing, its exterior margin bulging outwards and is somewhat interrupted near the inner margin of the wing; in *fasciatana* it is broad and diffuse on the costa. In *instrutana* the markings of the wings are pure dark brown, in *fasciatana* they are testaceous brown.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris fœdana, n. s.

This specimen, although of much smaller size, recalls *permundana*; but the pale spaces on each side of the central fascia are much broader in *fœdana* than in *permundana*.

Fore wings luteous with brown markings. The basal patch is deeply divided and forms three patches, the smallest of which is near the costa and is separated from the other parts. The central fascia is brown and is likewise divided into three parts, each of which is narrowly margined with dull bluish edging. The oblique streak from the hinder margin is brown and edged on both sides with dull-bluish.

It may be that *foedana*, *concinna* and *permundana* really constitute but one species. This must be determined in the future.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris versicolorana, Clem. Proc. Acad. Nat. Sci., Aug. 1860, p. 357.

This species, which is ordinarily distinguished by the white or yellowish-white costa at the base of the wing and the white space towards the hinder margin of the wing, is represented by a specimen in the Society's Collection, in which all the white is replaced by pale testaceous having in certain lights a dull bluish lustre. I think it is not necessary to describe it as a distinct species, as to my mind it is evidently a variation.

Doubtless too many species have been created out of the material that has been before me, but I have been governed entirely by a wish to notice clearly all the differences in individuals belonging to this group, and not by a desire to multiply descriptions

LOZOTÆNIA, Stephens.

Proc. Acad. Nat. Sci., Aug. 1860, p. 346.

The species described heretofore and in the present paper, may be tabulated as follows:

Fore wings purplish-brown.	
Hind wings pale-brownish.....	purpurana.
Fore wings cinnamon or reddish-brown.	
Hind wings ochreous near the apex.....	Rosaceana.
Hind wings fuscous.....	fervidana.
Fore wings ochreous.	
Hind wings dark-fuscous.....	fractivittana.
Hind wings pale-ochreous.....	vesperana.
Fore wings gray.....	fuscolineana.

Lozotænia vesperana, n. s.—Fore wings ochreous, with three ochreous brown spots, two along the costa near the middle and one on the inner margin of the wing beneath the costal spots. The wings are striated with numerous, short ochreous-brown lines. Hind wings pale-ochreous.

Thorax, head and labial palpi ochreous-brown.

Col. Ent. Soc. Philadelphia.—Virginia.

Lozotænia purpurana, n. s.—Fore wings dull purplish-brown, with the costa at the excised portion behind the tip, touched narrowly with pure bright brown. The hinder portion of the wing ochreous-brown, containing two slender dark brown lines which are parallel to the hinder margin. The basal patch is not distinct. The central fascia, oblique and dark purplish-brown. Hind wings pale-brownish, touched externally with fuscous.

Author's Collection.

Lozotænia fractivittana, n. s.—Fore wings ochreous, discolored towards the base, with brownish. On the costa are two dark brown spots, one about the middle of the costa, obliquely opposite to which on the inner margin near the

anal angle is a large spot of the same hue. The other costal spot is elongated and placed on the costa near the tip of the wing. Hind wings dark fuscous.

Col. Ent. Soc. Philadelphia.--Virginia.

Lozotænia fuscolineana, n. s.—Fore wings gray, slightly clouded with dark fuscous towards the tip and at the base, and marbled with blackish-brown lines especially towards the tip. The basal patch is well marked by two parallel, blackish-brown, angulated lines. The central fascia, which is nearly transverse is dark-brown, and margined on each side by a blackish-brown line. The gray space on the basal side of the central fascia, has a slender, central blackish-brown line. The space exterior to the central fascia is clouded with fuscous, except a gray space above the anal angle and varied with delicate blackish-brown lines. Hind wings grayish-fuscous.

I think this imago can scarcely belong to this genus, but there is no other known to me in which it can be placed with more propriety. The costa is regularly arched from the base to the tip of the wing, with the costal fold not appressed. The apex of the wing is not produced upwards and the hinder margin is obliquely rounded. Independent of other considerations, the costal fold is not broad enough, to suggest the probability of its belonging to *Ptycholoma*, and this and the present one are the only genera amongst the *Platææ*, known to me, in which it can be placed.

Coll. Ent. Soc. Philadelphia.—Virginia.

XANTHOSETIA, Steph.

Xanthosetia albicomana, n. s.—Fore wings bright lemon-yellow, tinted especially towards the tip of the wing with reddish. From the base of the wing a reddish band set with lustrous scales, curves along the costa to the middle of the wing, leaving a lemon-yellow space at the base beneath the costa. Beyond the middle of the costa is an oblique band of the same hue likewise sprinkled with lustrous scales, and along the margin of the wing is a deep reddish stripe bearing lustrous points. Cilia lemon-yellow. Hind wings whitish. Head, thorax and labial palpi white.

Coll. Ent. Soc. Philadelphia.—Virginia.

STEGANOPTYCHA, Steph.

Proc. Ent. Soc. Philad., Dec. 1864, p. 519.

Fore wings pale-yellowish.....**Ochreana**.

Fore wings white, varied with blackish-brown.....**variana**.

Fore wings dark-brown or copperish-brown.

Ocelloid spot silvery, with three black dashes.....**crispana**.

Ocelloid spot ochreous, with one black dash.....**flavocellana**.

Steganoptycha crispana, n. s.—Fore wings dark-brown, varied with blackish-brown striations. The costa from the base of the wing to the tip, is striated with blackish-brown and beyond the middle is geminated with pale ochreous, the last gemination at the tip being large, white and with a silvery streak, edged on each side with brassy lines beneath it. Ocelloid spot silvery with a pale ochreous center, bearing three black dashes. Hind wings dark, fuscous.

Author's Collection.

***Steganoptycha flavocellana*, n. s.**—Fore wings copperish-brown. The costa is striated from the middle to the tip with dark brown, the geminations faint and dull ochreous, those near the tip forming a dull ochreous spot. One of the costal striæ, which is dark-brown or luteous-brown, is extended very obliquely from the apical third of the wing to the hinder margin and curves behind the ocelloid spot. The ocelloid spot is pale ochreous, with a dull silvery spot along its inner margin and a small one on its upper, outer margin, with a black, central dash, and one on its costal edge. Hind wings dark fuscous.

Author's Collection.

Other specimens from Virginia, in Col. Ent. Soc. Philad., and one in my own, are not more than half the size of the imago described. Their general hue is paler than the specimen I have chosen for the typical one.

TORTRIX, Treit.

***Tortrix lutosana*, n. s.**—Fore wings ochreous, or pale-ochreous. The basal patch is scarcely indicated, but the wing at the base is more or less speckled with dark brownish. The central fascia is well indicated and is dark-brown from the costa to the middle of the wing, and thence to the dorsal margin reddish-brown. Between the central fascia and the tip of the wing, is a dark brown costal spot. The terminal portion of the wing is of the general hue. Hind wings pale-fuscous.

In the dark specimens the general color of the wing is whitish, particularly towards the terminal margin and the basal patch is indicated and more or less defined by dark brownish lines.

Col. Ent. Soc. Philadelphia.—Virginia, and Author's Collection.

***Tortrix incertana*, n. s.**—Fore wings cinnamon-brown; along the hinder margin pale ochreous. The basal patch is not indicated. The central fascia is broad, reddish-brown and on the dorsal margin interior to the central fascia, is a small, semi-oval dark-ochreous spot, and the dorsal margin thence to the base is discolored with dark-brownish. The subapical patch on the costa is dark brown and beneath it, in the ochreous portion of the wing is a testaceous-brown spot. Hind wings dark fuscous.

Author's Collection.

These species are of small size, and were it not for the fact that the costal fold is absent, they might with propriety be included in *Lozotænia*.

The following species, I acknowledge frankly, I am unable to locate. It belongs to the family or group, *Tortricidæ*, but I cannot satisfy myself that it is a member of any genus in this group. The only work I have that treats of the *Tortricina*, is Mr. Wilkinson's British Tortrices, and his generic diagnoses are so peculiarly written, his tables of genera founded upon a fanciful comparison of the length of the middle joint of the labial palpi with the apical joint, that the location of a specimen is very troublesome and difficult. At some subsequent day, I will review what I have done in this group, as soon as I can obtain types of European

genera and thus correct the numerous errors I have doubtless committed, by describing new generic groups, when genera have already been created into which they could have been received and of which I have no knowledge.

Therefore, rather than describe the following insect under a new generic name, I prefer to place it here provisionally.

Tortrix? fumiferana.—Fore wings brown, varied with dark brown, short striæ. The basal patch is indicated by dark brown striæ, but the central fascia is not indicated. Following the basal patch is a grayish-brown space having a shining lustre; its exterior edge is irregular and it widens towards the dorsal margin, where it bears short, dark-brown striæ. About the middle of the costa is a round spot of the same hue and lustre, and along the terminal margin is a stripe with irregular margins, of the same hue and lustre bordered on each side with dark brown.

Sometimes the grayish-lustre is absent on the markings, which are then simply of a paler brown than the general hue. Hind wings dark fuscous.

Col. Ent. Soc. Philadelphia.—Virginia.

HALONOTA, Steph.

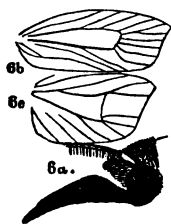
Proc. Acad. Nat. Sci., Aug. 1860, p. 357.

Halonota tautana, n. s.—Fore wings dark brown, having a coppery hue. The basal patch is large and well defined, and of the general hue. It is limited exteriorly by the dorsal blotch which is grayish with a violet hue, and is connected with the first geminated costal streak, containing a short, brownish line. Thence to the apex, the costa is streaked alternately with brownish and geminated with lustrous gray. Exterior to the dorsal blotch are two lustrous gray, transverse streaks. The hinder margin is spotted with black. Hind wings fuscous, with a coppery hue.

Coll. Ent. Soc. Philadelphia.—Virginia.

LEPTORIS,* n. gen.

Hind wings rather broader than fore wings, costa slightly arched in the middle, apex somewhat acute, apical margin slightly concave.



6 a, Head of *L. breviornatana*.

6 b, Fore wing.

6 c, Hind wing.

The costal and subcostal veins have a common base. The branches of the subcostal are divergent from the origin of the discal, which is regularly curved. Median vein 4-branched, three of which are rather aggregated, the posterior remote.

Fore wings, costa not dilated at the base, regularly arched; apex acute; apical margin slightly excavated and oblique; anal angle rounded. The branches of the subcostal are equidistant, the apical, furcate.

The antennæ are doubly ciliated, with rather long hairs. The labial palpi are smooth, exceed the face by nearly twice

* *λεπτος*; *tenuis*, and *pis* *nasus*.

the length of the head, rather slender, porrected, thickest opposite the face, thence suddenly convex and tapering to the tip, with the margin beneath slightly concave.

Leptoris breviornatana.—Fore wings tawny-yellow, with the veins and nervules brown, and with brown strise beneath the nervules. An oblique brown band arises on the basal third of the costa, and runs to the middle of the dorsal margin, but does not reach it. On the costa, over the subcostal nervules, is a brown patch, striated with darker brown. Extreme apical margin brown, cilia tawny. Hind wings pale yellowish-white. Head and labial palpi dark brownish.

Coll. Ent. Soc. Philadelphia.—Virginia.

SMICROTES.

Costa with a slight fold at the base in the ♂.

Smicrotes virescana.—Fore wings greenish-yellow. Costa at the base touched with brown, with two testaceous spots on the costa, one about the middle and the other midway between it and the tip of the wing. The first costal spot is faintly extended across the wing as a yellowish band and the space between the spots is of a somewhat lighter hue than the rest of the wing. Hind wings grayish fuscous.

Author's Collection.

MIXODIA?

Mixodia? intermistana.—Fore wings blackish-brown varied with whitish that is much clouded and speckled with blackish-brown. The basal patch is indicated with tolerable distinctness, is blackish-brown, and angulated over the base of the disk. The central fascia, blackish-brown, of irregular form, contracted in the middle, expanded on the dorsal margin, and contains, about the end of the disk, a rather conspicuous white spot. The space between the basal patch and central fascia is grayish, much clouded with dark brown. Exterior to the central fascia the wing is sprinkled with white and at the anal angle is a white patch, speckled with dark brownish. The costa is geminated with white; the geminations are rather large from the middle to the tip. The white geminations are separated by blackish-brown spots. Cilia dark-brown, speckled with white especially beneath the tip. Hind wings grayish fuscous.

Author's Collection.

SIDEREA?

Sideres? nubilana.—Fore wings brown, with dark brown markings. The basal patch is indicated by a dark brown angulated line and the central fascia, by an irregular dark brown band which becomes ochreous-brown in the middle of the wing and seems to be separated from a conspicuous dark brown triangular patch near the dorsal margin, which is edged narrowly with ochreous. In the space between the basal patch and central fascia in the fold of the wing, is a dark brown spot. Near the anal angle is a dark brown, obliquely placed stripe, and one of the same hue above it. The costal space above these stripes is ochreous.

EURYPTYCHIA,* n. gen.

Hind wings broader than fore wings. Costal and subcostal veins with a common origin; branches of subcostal connivent. Median vein 4-branched, three of which aggregated, the two central ones from a common base.

* *εὐρύς* latus, *πτυχή* plicatura.

Fore wings *with a broad fold*, extending to the middle of the costa, closely appressed; at least three times longer than broad; costa straight, tip moderately acute, apical margin rounded. The nervules given off from the posterior end of the cell are bent towards each other, or are somewhat aggregated.

Head smooth, with ocelli at base of antennæ. Antennæ filiform, simple. Labial palpi *do not exceed the face*, are curved, smooth, rather slender, expanded towards the tip, the apical joint scarcely perceptible, except in front.

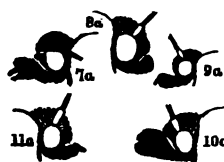
Euryptychia saligneana.—Fore wings white tinted with yellowish. The basal patch is dark brown. The wing beyond the basal patch is nearly white varied with leaden-colored speckles and striped over the nervules with dull, leaden-gray, transverse stripes, two of which near the anal angle form a white ocelloid patch. Immediately interior to the ocelloid patch is a small black spot, having a line of black atoms running into it, from above and beneath. Below the apex, on the hind margin, is a triangular brown patch which is varied with grayish and dotted with black in the middle and along the inner edge. The costa is geminated with white and striped with brown. Hind wings dark fuscous.

I have before me a single specimen of the above insect, received from my esteemed friend Benj. D. Walsh of Rock Island. It was bred by Mr. Walsh from a willow gall, a year or two ago. I have unfortunately mislaid the letter in which his account of it is written.

The imago appears to me to differ from all the genera of Plicatæ to a degree that warrants me to describe it as a new genera.

CALLIMOSEMA,* n. gen.

Fore wings narrow, with a very large ocelloid spot, nearly three times longer than broad across the anal angle; costa nearly straight; apex rather acute, apical margin obliquely rounded. Hind wings broader than the fore wings. Neuration, as in *Ioplocama*.



7 a, Head of *Siderea? nubilana*.

8 a, Head of *Euryptychia saligneana*.

9 a, Head of *Callimosema scintillana*.

10 a, Head of *Ioplocama formosana*.

11 a, Head of *Carpocapsa pomonella*.

Head small, smooth. Antennæ filiform simple. Labial palpi, porrected, exceeding the face by one-half their length, nearly cylindrical, but expanded towards the tip and clothed with rather long scales beneath; apical joint scarcely perceptible.

In *Ioplocama* the wings are broader; the costa of the fore wings dilated at the base. The labial palpi are broad, porrected, exceed the face by at least one-half of their length, are much excised opposite the face, nearly

* χαλλίμος pulcherrimus, σῆμα signum.

straight beneath, broad and much expanded beyond the face and clothed *above and beneath* with long scales.

In *Carpocapsa* the wings are broader than in *Callimosema*; the abial palpi are cylindrical, exceed the face but little, closely scaled, curved and ascending, the apical joint very distinct.

It is probable that *Callimosema* or *Iaplocama* may be identical or nearly so with the European genus *Grapholita*, but both differ from it in having the apical branch of the subcostal vein of the fore wings mpled and in the furcate medio-central nervule of the hind wings.

Callimosema scintillana.—Fore wings pale yellowish, abundantly dusted along the costa and inner margin with dark fuscous. From the base nearly to the middle of the wing, proceeds a pale yellow basal stripe along the disk, which terminates in a silvery spot. On the costa from the middle of the wing to the tip are four equidistant pale yellow costal streaks, the first of which is transverse and ends in the middle of the wing in a silvery spot, the last near the tip is extended into a silvery line. From the silvery spot of the basal streak proceeds a broad ochreous stripe which widens as it proceeds to the hinder margin, and contains between the first and last costal streaks, a very large ocelloid spot; the costal half of this is pale-yellow, margined with silvery and striated with dark fuscous lines; the dorsal half consists of three large raised silvery spots, the center one having three black spots on each side, the one nearest the hinder margin of the wing, three on its basal side, and that nearest the base of the wing, three externally and two internally. Cilia pale-yellow, dusted with fuscous. Hind wings dark fuscous, cilia pale yellowish.

Author's Collection.

A pair of *scintillana* was taken several years ago on a grass plat. beneath a pear tree. One of them was unfortunately destroyed, by an accident. I have searched in every successive year for other specimens, and up to the present time have not found them.

TINEINA.

BATRACHEDEA, Stainton.

Hind wings very narrow, pointed; costa rather concave from the tip to near the base, *where there is a projecting tuft*, inner margin concave. The subcostal vein is simple, runs very near the costa and reaches it beyond the middle of the wing. The median vein is simple and runs nearly parallel to the inner margin and enters it nearly opposite the costal termination of the subcostal vein; between these, in the middle of the wing, originates an independent discal branch, which is obscurely furcate, its longest branch being lost before it reaches the apex of the wing. There are two folds on the wing which resemble



veins, one above and parallel to the median vein, the other, above and parallel to the discal branch.

Fore wings elongate-lanceolate. *The discoidal cell is obliquely placed in the wing*, its lower angle approaching very near the dorsal margin of the wing. The subcostal vein is arched, and gives off a long, oblique, marginal branch from behind the middle of the wing, one at the superior angle of the cell and one intermediate. A very short and indistinct vein closes the cell posteriorly, and two indistinct apical veins succeed the third subcosto-marginal branch, one of which is delivered to the tip and the other to the costa behind the tip.

The median vein is 3-branched, the two superior branches sometimes from a common base and the posterior branch *extremely short* and indistinct; thence the median, runs obliquely and direct to the base. The submedian is indistinctly forked at its base.

Head smooth, without ocelli. Antennæ rather more than one-half as long as fore wings, setaceous, joints thickly set, without hairs; the basal joint, *short*. Labial palpi moderately long, recurved, acute; second joint compressed, subclavate. Tongue moderate, clothed with scales.

Batrachedra salicipomonella.—Fore wings fuscous, with a rather broad whitish stripe, freely dusted with fuscous, running through the middle of the wing, from the base and along the apical margin to the tip. Near the basal third of the wing on the dorsal edge of the whitish stripe is an elongate, blackish-brown spot, and from the middle of the wing towards the tip, it is edged on its costal side by a *blackish-brown line* which contains sometimes a spot of the same hue. The apical portion of the stripe is more freely dusted with fuscous than the other portions. Cilia fuscous. Hind wings fuscous, cilia paler.

Antennæ dark fuscous, without white annulations, except near the tip. Head fuscous above, face white. Labial palpi dark fuscous; second joint, with a white ring at the extreme tip, sometimes white at the base, with a broad fuscous ring near the tip; terminal joint fuscous, with a more or less distinct whitish central ring and the extreme tip whitish.

This is a very interesting "micro," not only in consequence of the specific resemblance it bears to the European *Batrachedra præangusta*, but of the discovery of its larva by one of our most gifted and promising entomologists, Mr. Benj. D. Walsh of Rock Island, Ill.

In the note which accompanied the perfect insects, Mr. Walsh writes: "I enclose herewith several specimens of a moth, bred from the Tenthredinidous gall *Salicis pomum* Walsh MS., and a single one from the Cecidomyiaceous gall *S. rhodoides* Walsh. This is the insect that I think I mentioned to you as being very prettily marked in the larva state, each segment having a broad, black band and the ground color being whitish. I had a single one come out last summer, but

the great bulk of them hibernated either in larva or pupa state and came out May 8th—20th. They vary but little. I have beaten larvæ of very similar appearance off oak trees."

So far as I am informed, the larvæ is unknown to European lepidopterists, although it is recorded that the perfect insect, *præangusta*, is very common among willows and poplars in July. and may frequently be observed sitting on the trunks of those trees with the anterior feet put back, like *Bedellia*, and the head raised a little.

Mr. Walsh has the honor of having made an interesting discovery, that puts an end to all uncertainty respecting the larva and its food plants.

In a subsequent letter Mr. Walsh kindly supplied me with the following description of the larva :

"Length .20 inch. Body tapering at each end, opaque, milky-whitish, with a few short, whitish hairs. The first segment behind the head, with an obsemicircular, shining, glabrous, brown, dorsal shield; second segment with an interrupted, opaque brown, dorsal band on its anterior edge, the interruption occupying about one-third of the band; segments 3-12 with an uninterrupted opaque brown, dorsal band on the anterior edge, and segment eleventh with a similar band at its tip also. Head yellowish. Legs and venter immaculate, whitish. Legs six, prelegs ten, normally arranged. Spins a thread, wriggles much when disturbed and runs backwards with great agility.

"This larva occurred in abundance Aug. 23rd, and subsequently in the Tenthredinidous gall, *S. pomum* Walsh MS., which grows on the leaves of *Salix cordata*. Each gall contained but a single larva, unaccompanied by the larva of the *Nematus* which makes the gall, which it must consequently have destroyed or starved out, either in the egg or in the larva state.

"A single imago came out in the autumn of the same year, but the great bulk of them came out next spring, May 8—20, from galls kept through the winter. There can be no doubt of the correlation of larva and imago, because no other lepidopterous larva or imago occurred in the gall *S. pomum*, though I had three or four hundred of them in my breeding vase. The insect must hibernate normally in the larva state, for I noticed numbers of them in the spring crawling about among the galls. In a state of confinement, it generally retires to the inside of the gall to assume the pupa state, though I noticed one or two cocoons spun among the galls. Probably in a state of nature it hibernates in the gall, comes out of it in the spring and spins its cocoon amongst dry leaves and rubbish.

"I also bred a single imago of this same species, May 11th, from the Cecidomyioidous gall *S. rhodoides* Walsh, from galls kept through the winter, and I found in the spring a denuded imago of what was apparently the same species, dead and dry amongst a lot of Tenthredinoidous galls, *S. desmodiodes* Walsh MS., which is closely allied to *S. pomum*, but occurs on the leaves of a very distinct species of willow. Thus we have three different willow-galls inhabited by the same moth, two of them made by saw-flies and one by a gall-gnat.

"I have several times beaten off black-oak trees larvæ apparently very similar to this *Batrachedra*, and with the same harlequin-like markings, but whether the two are specifically identical, I cannot say."

GRACILARIA, Zell.

Proc. Ac. Nat. Sci., Jan. 1860, p. 6. Proc. Ent. Soc. Philad. Id. March, 1863, Id. Dec. 1864, p. 505.

I wish to redescribe and change the name of a species, whose history I have ascertained, and which I have recently bred. The first description was drawn from a rather worn specimen, but in the main, is correct. In order that the species heretofore described may be more readily distinguished, I have tabulated them as follows:

Legs with white tibæ.

F. w. costal half-yellow; dorsal, purple, with central black dot.....*Desmodifoliella*.

Legs without white tibæ.

F. w. with a yellow, trigonal, costal mark.

Mark large, extended to tip of wing.

F. w. reddish-violet; mark distinct, single; base of inner margin yellow.....*superbifrontella*.

F. w. dark purple; mark indistinctly double; base of inner margin dark purple.....*Blandella*.

Mark small; f. w. purplish, with costal spots.....*coroniella*.

F. w. with fasciaform, white markings.

Markings broad; with exterior costal spots.....*fulgidella*.

Markings narrow, without costal spots.

With four equidistant streaks.....*venustella*.

With one long costal and dorsal streak near the tip of wing.....*strigifinitella*.

Gracilaria Desmodifoliella.—*G. violacella*, Proc. Ac. Nat. Sci., Jan. 1860, p. 7.—

The costal half of the fore wings, limited by the fold, is yellow; the dorsal half, purple and the edge of the latter curves to the costa a little interior to the tip of the wing. In the middle of the wing, on the edge of the purplish portion, is a black dot, and the costa along the middle has a few dots of the same hue, but not so conspicuous. Cilia purplish. Hind wings dark fuscous; cilia the same.

Head and antennæ purplish. Face white. Labial palpi white, with the ends of the middle and terminal joints touched with brown. Hinder pair of legs yellowish; middle and anterior purplish-brown, with *white tarsi*.

NEPTICULA, Zell.

Proc. Acad. Nat. Sci. Philad., June, 1860, p. 214. Proc. Ent. Soc. Philad., March 1862, p. 149. Id. Nov. 1861, p. 82. Id. Jan. 1862, p. 133.

Since the foregoing pages were written, I have been successful in rearing *N. saginella* from leaves of oaks, collected during the latter part of July; and I am therefore able to say definitely, that while the nepticuliform mines in the leaves of the chestnut *may* be produced by the larva of *Bucculatrix trifasciella*, those in the leaves of oaks are certainly the work of a *Nepticula* miner.

The mines in chestnut leaves are shorter than those on oak leaves, although very similar in appearance. The following is a table of the species described to the present time.

Fore wings without spots or fasciæ.

Pale ochreous, dusted with blackish-brown.....*saginella*.

F. w. with a white spot and a costal streak.

Dark brown*Platanella*.

F. w. with pale or silvery fasciæ.

Blackish-brown; fascia median, curved.....*Rubifoliella*.

Purplish-fuscous; fascia oblique, rather broad.....*fuscotibiella*.

Bronzy-green; with two fasciæ.....*bifasciella*.

***Nepticula saginella*.**—Proc. Ent. Soc. Philad., Nov. 1861, p. 85.—Fore wings pale ochreous, sprinkled or dusted freely, with blackish-brown, over the entire surface. Cilia ochreous, slightly clothed with blackish-brown. Head and face blackish-brown. Eye-caps ochreous.

The larvæ were taken nearly half fed in leaves of black oak, on the 29th of July, and at this date most of the mines are abandoned. The larva is bright-green with a central dark-green line of ingesta. Head slightly touched with brownish.

The mine is a serpentine, rather short tract, which, when occupied or recent, is white and nearly transparent, with a narrow, very black central frass line. It is frequently bent or curved as the larva approaches maturity. The cocoonet is yellowish-white. Both the imago and larva are very small.

Upon the authority of Mr. H. T. Stainton, for which I feel the highest respect, "the six anterior legs so universally present in Lepidopterous larvæ are wanting in *Nepticula* larvæ, and are replaced by membranous processes or prolegs;" each of the remaining segments are furnished with a pair of prolegs making eighteen in all. I find after a careful examination, that counting the head as the first segment, in *N. saginella*, the third and fourth have a pair of legs, the fifth segment is without any, and the six following segments are each supplied with a pair of prolegs. So that the formula for the legs of *N. saginella* would stand thus, making sixteen in all:

—2.8—

I have not yet examined the neururation of *N. saginella* and it may be that it is a Trifurcula. An examination necessitates the destruction of the minute specimen, and I wish to defer it until I have secured others. It appears to me, however, that the eyecaps are too large to permit *saginella* to remain amongst the Nepticulæ. The larvæ of Trifurcula are entirely unknown, so that one can receive no assistance in classification from a knowledge of their habits.

BUCCULATRIX, Zeller.

Proc. Acad. Nat. Sci., Jan. 1860, p. 13; June, 1860, p. 211.

Bucculatrix trifasciella.—Fore wings ochreous, with three silvery, equidistant, costal streaks, the first near the base, the last at the beginning of the apical cilia, with the spaces between them somewhat darker than the general hue. On the middle of the dorsal margin is a spot of blackish-brown, with a patch of dispersed scales of the same hue, exterior to it, limited externally by a silvery dorsal streak. At the extreme tip is a small blackish-brown spot, with an intercillial line of the same hue exterior to it. Cilia ochreous. Hind wings fuscous; cilia the same.

Antennæ fuscous. Head ochreous; eye-caps somewhat silvery-white.

The cocoonet of this species was found on the leaf of a chestnut tree early in July. The cocoon is elongated, ribbed externally and dark gray. The imago appeared in the latter part of July.

The leaves of chestnut is mined early in the season by a larva that I have regarded as a *Nepticula* from the characters of the mine, but I am now disposed to think that the mine is made by the larva of *trifasciella* during its early life. This mine is noticed in the Proceedings for November, 1861, p. 85, under *Nepticula saginella*.

INCURVARIA, Haw.

Proc. Acad. Nat. Sci., Jan. 1860, p. 5.

Fore and hind wings lanceolate, pointed. Fore wings, subcostal vein with three branches near the end of the disk; apical branch furcate near its base; discal nervules, two. Hind wings, subcostal vein furcate; discal nervule, one.

Incurvaria mediotriatella.—Fore wings, iridescent bluish-purple, with a broad golden stripe from the base to the middle of the dorsal margin, leaving a stripe of the general hue on the base of the dorsal margin, and with a rather broad, obliquely placed costal streak, of the same hue, at the beginning of the apical cilia. The cilia are intermixed with golden scales. Hind wings reddish-purple, cilia fuscous. Antennæ and head pale-yellowish.

Taken on wing, in damp woods, the latter part of July.

This species differs in some respects from both *russatella* and *Acerioliella* and from the European typical species. The antennæ are nearly if not quite as long as the fore wings, and perhaps in the future it may be necessary to create a new group for its reception. I have not deemed this advisable at present, as its oral parts are quite identical with those of the genus.

Easton, Pennsylvania.

DESCRIPTION OF A NEW SPECIES OF LIMENITIS.

BY WM. H. EDWARDS, NEWBURGH, N. Y.

(Communicated Aug. 14, 1865.)

LIMENITIS PROSERPINA.

Male.—Expands $2\frac{1}{10}$ inches.

Upper side dull black, secondaries only having a slight bluish tinge on the disk; hind margins bordered by a double row of blue crescents, which are wanting on primaries except at inner angle; the marginal row of secondaries is indistinct; beyond the crescents, on secondaries, is a row of russet spots almost obsolete; primaries have a white streak on costa a little more than half-way from the base, a white sub-apical spot divided by the costal nervure, and a curved row of indistinct whitish spots across the wing from the costal streak to the inner margin near the angle; emarginations of both wings white.

Under side light reddish-brown, with a dark shade over the basal half of primaries; both wings have a double row of pale blue crescents on a black ground, the apical, on primaries, whitish; preceeding these is a row of russet spots, before which, on secondaries, is a blue white streak; primaries have a large sub-apical white spot, and a white band, angular without, curved within, corresponding to the row of spots on upper side; base of wings marked by russet and blue spots, primaries having one of the former on the arc and another within the cell, both edged with black; between these is a small blue spot and a second next base; secondaries have a russet spot on the arc, another within the cell and a third at base of sub-costal nervure; costa of both wings russet at base.

Body black above; thorax black, abdomen white; palpi and fore legs white edged with black; antennæ and club black.

Female unknown; Catskill Mountains.

The specimen above described was taken by me in 1863, near the Mountain House. On the 2nd of August of this year (1865), I took a second male of same characters in the Stony Clove, a few miles west of the Mountain House. The upper surface agrees in all respects with the other, except that the band of white spots of primaries is indicated by a few scales only. On the under side the band extends from inner margin two-thirds across the wing only. This species differs from *Ursula* in color of both surfaces, in the white band, in the russet spots on upper side of secondaries, and the whitish streak on same wings below. The lower surface more resembles *Arthemis*, and the shape of secondaries is that of *Arthemis*, being more rounded than *Ursula*.

A Synonymical Catalogue of North American SPHINGIDÆ, with Notes and Descriptions.

BY AUG. R. GROTE AND COLEMAN T. ROBINSON.

Family SPHINGIDÆ.

Tribe, *Macroglossini*.

Genus **LEPISIESIA**, Grote.

1. flavofasciata.

Macroglossa flavofasciata, Barnston, Walk. C. B. M. Lep. Pt. 8, p. 87. (1856.)

Macroglossa flavofasciata, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 131. (1859.)

Macroglossa flavofasciata, Morris, Syn. N. A. Lep. Sm. Ins. p. 151. (1862.)

Lepisesia flavofasciata, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5. p. 39. (7). (1865.)

Habitat.—Atlantic District!

SESIA, Fabricius, emend. nobis.

2. diffinis.

Sphinx fuciformis, Smith, Ab. & Sm. Ins. Ga. Vol. 1, p. 85, Plate 43. (1797.)

Not *Sphinx fuciformis*, Linn. (Europe.)

Macroglossa diffinis, Boisduval, Sp. Gen. Plate 15, fig. 2. (1836.)

Sesia diffinis, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 308 (28). (1839.)

Sesia diffinis, Walker, C. B. M. Lep. Part 8, p. 81. (1856.)

Sesia diffinis, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 129. (1859.)

Sesia diffinis, Morris, Syn. N. A. Lep. Sm. Ins. p. 148. (1862.)

Sesia diffinis, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Habitat.—Atlantic District!

HÆMORRHAGIA, Grote & Robinson.

3. gracilis.

Sesia ruficaudis, Walker, C. B. M. Lep. Part 8, p. 82. (1856.)

Not *Sesia ruficaudis*, Kirby. (1837.)

Hæmorrhagia gracilis, Grote & Robinson. Plate 3, figs. 1 and 2, ♂. (1865.)

Habitat.—Atlantic District!

4. ruficaudis.

Sesia ruficaudis, Kirby, Faun. Am. Bor. Vol. 4, p. 303. (1837.)

Hæmorrhagia ruficaudis, Grote & Robinson. (1865.)

Habitat.—"Canada." (Kirby.)

5. thysbe.

Sphinx Thysbe, Fabricius, Syst. Ent. Flens. et. Lips. p. 548. (1775.)

Sphinx Thysbe, Fabricius, Sp. Ins. Vol. 2, p. 155. (1781.)

Sphinx Pelasgus, Cramer, Exot. Vol. 3, p. 93. Pl. 248, fig. B. (1782.)

Sesia Thysbe, Fabricius, Mant. Ins. Vol. 1. p. 99. (1787.)

Sesia Thysbe, Fabricius, Ent. Syst. Haf. Vol. 3, p. 381. (1793.)

Sesia Cimbiciformis, Stephens, Ill. Brit. Ent. Haust. Vol. 1, p. 135. (1828.)

- Cephonodes Pelasgus*, Hübner, Verz. Schm. p. 131. (1816.)
Sesia Pelasgus, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 308 (28). (1839.)
Sesia Thysbe, Walker, C. B. M. Lep. Part 8, p. 82. (1856.)
Sesia Thysbe, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 129. (1859.)
Sesia thysbe, Morris, Syn. N. A. Lep. Sm. Ins. p. 149. (1862.)
Sesia pelasgus, Harris, Ins. Inj. Veg. new ed. p. 328, fig. 156. (1863.)
Hæmorrhagia thysbe, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

6. *fuscicaudis*.

- Macroglossa fuscicaudis*, Boisduval, Walk. C. B. M. Lep. Pt. 8, p. 83. (1856.)
Sesia fuscicaudis, Walker, C. B. M. Lep. Part 8, p. 83. (1856.)
Sesia fuscicaudis, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 130. (1859.)
Sesia fuscicaudis, Morris, Syn. N. A. Lep. Sm. Ins. p. 150. (1862.)
Hæmorrhagia fuscicaudis, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

ÆLLOPOS, Hübner.

7. *tantalus*.

- Sphinx Tantalus*, Linn., Syst. Nat. Vol. 1, p. 803, No. 25. (1766.)
Sphinx zonata, Drury, Exot. Vol. 1, p. 57, Plate 26, fig. 5. (1770.)
Sphinx Tantalus, Cramer, Exot. Vol. 1, p. 107, Plate 68, fig. F. (1779.)
Sphinx Tantalus, Fabricius, Sp. Ins. Vol. 2, p. 153. (1781.)
Sesia Tantalus, Fabricius, Mant. Ins. Haf. p. 98. (1787.)
Ællopos Tantalus, Hübner, Exot. Samm. Lep. 2, Sph. 3, Leg. 1, Bomb. A. Vul. 2. (1806—1824.)
Macroglossa zonata, Westw., Drury, Vol. 1, p. 52; Pl. 26, fig. 1. (1837.)
Macroglossa Tantalus, H-S., Corr. Bl. p. 56 (20). (1865.)
Ællopos Tantalus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 42 (10). (1865.)

Habitat.—Tropical Insular District!

8. *titan*.

- Sphinx Titan*, Cramer, Exot. Vol. 2, p. 73, fig. F. (1779.)
Ællopos Titan, Hübner, Verz. Schm. p. 131. (1816.)
Macroglossum annulosum, Swainson, Zool. Ill. Pl. 132, upper fig. (1822.)
Macroglossa balteata, Kirtland, Sill. Jour. N. S. Vol. 13, p. 337. (1852.)
Macroglossa Titan, Burm., Sph. Braz. p. 17. (1856.)
Macroglossa Titan, H-S., Corr. Blatt. p. 56 (20). (1865.)
Ællopos Titan, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 41 (9). (1865.)

Habitat.—Atlantic and Tropical Insular Districts!

EUPYRRHOGLOSSUM, Grote.

9. *sagra*,

- Macroglossum sagra*, Poey, Cent. Lepid. Cub. Decade 2. (1832.)
Macroglossa sagra, Walker, C. B. M. Lep. Part 8, p. 89. (1856.)
Macroglossa sagra, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 132. (1859.)
Macroglossa sagra, Morris, Syn. N. A. Lep. p. 152. (1862.)
Macroglossa sagra, H-S., Corr. Blatt. p. 56 (20). (1865.)
Eupyrrhoglossum sagra, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 43 (11). (1865.)

Habitat.—Tropical Insular District!

10. *ceculus*.

- Sphinx Ceculus*, Cramer, Exot. Vol. 2, p. 80, Pl. 146, fig. G. (1779.)
Psithyros Ceculus, Hübner, Verz. Schm. p. 132. (1816.)
Macroglossum fasciatum, Swains. Zool. Ill. Pl. 132, lower fig. (1822.)
Macroglossa Ceculus, Walker, C. B. M. Part 8, p. 88. (1856.)
Macroglossa Ceculus, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 132. (1859.)
Macroglossa Ceculus, Morris, Syn. N. A. Lep. Sm. Ins. p. 151. (1862.)
Eupyrrhoglossum Ceculus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 43 (11). (1865.)

Habitat.—"Mexico." (Clemens.)

THYREUS, Swainson.11. **abbottii**.

- Thyreus Abbottii*, Swainson, Zool. Ill. Vol. 1, Pl. 60. (1821.)
Thyreus Abbottii, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 307 (27). (1839.)
Thyreus Abbottii, Walker, C. B. M. Lep. Part 8, p. 99. (1856.)
Thyreus Abbottii, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 135. (1859.)
Thyreus Abbottii, Morris, Syn. N. A. Lep. Sm. Ins. p. 156. (1862.)

Habitat.—Atlantic District!

AMPHION, Hübner.12. **nessus**.

- Sphinx Nessus*, Cramer, Exot. Vol. 2, p. 16, Pl. 107, fig. D. (1779.)
Sphinx Nessus, Fabricius, Mant. Ins. Haf. Vol. 1, p. 92. (1787.)
Sphinx Nessus, Fabricius, Ent. Syst. Haf. Vol. 3, p. 355. (1793.)
Amphion Nessus, Hübner, Verz. Schm. p. 135. (1816.)
Thyreus? Nessus, Harr., Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 308 (28). (1839.)
Thyreus Nessus, Walker, C. B. M. Lep. Part 8, p. 99. (1856.)
Thyreus Nessus, Clemens, S. N. A. Sph. Jour. A. N. S. Phil. p. 136. (1859.)
Thyreus Nessus, Morris, Syn. N. A. Lep. Sm. Ins. p. 157. (1862.)

Habitat.—Atlantic District!

DEIDAMIA, Clemens.13. **inscripta**.

- Pterogon? inscriptum*, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 306 (26). (1838.)
Thyreus? inscriptus, Walker, C. B. M. Lep. Part 8, p. 100. (1856.)
Deidamia inscripta, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 137. (1859.)
Deidamia inscripta, Morris, Syn. N. A. Lep. Sm. Ins. p. 159. (1862.)

Habitat.—Atlantic District!

PROSERPINUS, Hübner.14. **gauræ**.

- Sphinx gauræ*, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 61, Pl. 31. (1797.)
Proserpinus gauræ, Hübner, Verz. Schm. p. 132. (1816.)
Thyreus gauræ, Walker, C. B. M. Lep. Part 8, p. 100. (1856.)
Proserpinus gauræ, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 133. (1859.)
Proserpinus gauræ, Morris, Syn. N. A. Lep. Sm. Ins. p. 153. (1862.)?

Habitat.—"Georgia." (Abbot.) "Texas." (?) (Clemens.)

15. **clarkizæ**.

- Pterogon Clarkizæ*, Boisduval, Ann. Soc. Ent. Fr. 2ieme ser., t. 10, p. 319. (1852.)
Thyreus? Clarkizæ, Walker, C. B. M. Lep. Part 8, p. 262. (1856.)
Proserpinus Clarkizæ, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 134. (1859.)
Proserpinus Clarkizæ, Morris, Syn. N. A. Lep. Sm. Ins. p. 154. (1862.)

Habitat.—"California." (Boisduval.)

EUPROSERPINUS, Grote & Robinson.16. **phaeton**.

- Proserpinus Phaeton*, Boisduval, MSS.
Euproserpinus Phaeton, Grote & Robinson. (1865.)

Habitat.—Western District!

ENYO, Hübner.17. **lugubris**.

- Sphinx lugubris*, Linn., "Mant. 2, p. 537."
Sphinx lugubris, Drury, Exot. Vol. 1, p. 61, Plate 28, fig. 2. (1770.)
Sphinx lugubris, Fabr., Syst. Ent. s. Ins. Flens & Lips. p. 537. (1775.)
Sphinx lugubris, Fabr., Sp. Ins. Vol. 2, p. 140. (1781.)
Sphinx Fegeus, Cramer, Exot. Vol. 3, p. 56, Pl. 225, fig. E. (1782.)
Sphinx lugubris, Fabricius, Mant. Ins. Vol. 2, p. 92. (1787.)
Sphinx lugubris, Fabricius, Ent. Syst. Vol. 3, p. 356. (1792.)
Sphinx lugubris, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 59, Pl. 30. (1797.)

- Enyo Phegeus*, Hübner, Verz. Schm. p. 132. (1816.)
Thyreus lugubris, Westw., Drury, Vol. 1, p. 55, Pl. 28, fig. 2. (1837.)
Thyreus lugubris, Har., Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 306 (26). (1839.)
Enyo lugubris, Walker, C. B. M. Lep. Pt. 8, p. 113. (1856.)
Pterogon lugubris, Burm., Syst. Ueb. Sph. Braz. p. 16. (1856.)
Enyo lugubris, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 139. (1859.)
Enyo lugubris, Morris, Syn. N. A. Lep. Sm. Ins. p. 162. (1862.)
Enyo lugubris, H-S., Corr. Blatt, p. 57 (21). (1865.)
Enyo lugubris, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 44 (12). (1865.)

Habitat.—Atlantic and Tropical Insular Districts!

18. *camertus*.

- Sphinx Camertus*, Cram., Exot. Vol. 3, p. 53, Pl. 225, fig. A. (1782.)
Enyo Camertus, Hübner, Verz. Schm. p. 132. (1816.)
Enyo Camertus, Walker, C. B. M. Lep. Pt. 8, p. 114. (1856.)
Enyo Camertus, H-S., Corr. Blatt, p. 57 (21). (1865.)
Enyo Camertus, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 44 (12). (1865.)

Habitat.—Tropical Insular District!

19. *danum*.

- Sphinx Danum*, Cramer, Exot. Vol. 3, p. 53, Pl. 225, fig. B. (1782.)
Enyo Danum, Hübner, Verz. Schm. p. 132. (1816.)
Enyo Danum, Walker, C. B. M. Lep. Pt. 8, p. 118. (1856.)
Pterogon Danum, Burm., Syst. Ueb. Sph. Braz. p. 16. (1856)?
Enyo Danum, H-S., Corr. Blatt, p. 57 (21). (1865.)
Enyo Danum, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 45. (13) (1865.)

Habitat.—Tropical Insular District!

20. *gorgon*.

- Sphinx Gorgon*, Cramer, Exot. Vol. 2, p. 73, Pl. 142, fig. E. (1779.)
Enyo Gorgon, Hübner, Verz. Schm. p. 132. (1816.)
Enyo lugubris, Hübner, Zutr., 3rd Hund. p. 40, figs. 595, 596. (1825.)
Enyo Gorgon, Walk., C. B. M. Pt. 8, p. 114. (1856.)

Habitat.—"West Indies." (Auth. Weidemeyer.)

21. ? *chloroptera*.

- Sphinx chloroptera*, Perty, "Del. Anim. Artic. Bras. Pl. 31, fig. 3."
Enyo chloroptera, Walker, C. B. M. Pt. 8, p. 118. (1856.)

Habitat.—"Honduras." (Walker.)

HEMEROPLANES, Hübner.

22. *pseudothyreus*.

- Calliomma oclus*? H-S., Corr. Blatt, p. 57 (21). (1865.)
 Not *Sphinx oclus*, Cram. Exot. Vol. 3, p. 39, pl. 216, fig. F. (1782.)
Hemeroplanes pseudothyreus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 46 (14), pl. 1, fig. 1. (1865.)

Habitat.—Tropical Insular District!

PERIGONIA, Boisduval.

23. *lusca*.

- Sphinx lusca*, Fabricius, "Gen. Ins. Mant. p. 272."
Sphinx lusca, Fabricius, Sp. Ins. Vol. 2, p. 140. (1781.)
Sphinx lusca, Fabricius, Mant. Ins. Vol. 2, p. 92. (1787.)
Sphinx lusca, Fabricius, Ent. Syst. Vol. 3, p. 356. (1792.)
Perigonia lusca, Walker, C. B. M. Lep. pt. 8, p. 101. (1856.)
Perigonia lusca, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 139. (1859.)
Perigonia lusca, Morris, Syn. N. A. Lep. Sm. Ins. p. 160. (1862.)
Perigonia lusca, H-S., Corr. Blatt. p. 56, (20.) (1865.)
Perigonia lusca, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 47, (15.) (1865.)

Habitat.—Tropical Insular and Continental Districts!

24. *lefebvrii*.

Macroglossa lefebvrii, Lucas, Sagra Hist. de l'île de Cuba. (H-S.)

Perigonia lefebvrii, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 48 (16). (1865.)

Habitat.—Tropical Insular District!

25. *restituta*.

Perigonia restituta, Walker, MSS.!

Habitat.—"Mexico." (Walker.)

26. *divisa*.

Perigonia divisa, Herrich-Schäffer, MSS.

Perigonia divisa, Grote, Ann. Lyc. Nat. Hist. N. Y. (1865.)

Habitat.—Tropical Insular District!

27. *subhamata*.

Perigonia subhamata, Walker, C. B. M. Lep. part 8, p. 102. (1856.)

Perigonia subhamata, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 138. (1859.)

Perigonia subhamata, Morris, Syn. N. A. Lep. Sm. Ins. p. 160. (1862.)

Habitat.—"Mexico." (Walker.)

28. *glaucescens*.

Perigonia glaucescens, Walker, C. B. M. Lep. part 8, p. 103. (1856.)

Perigonia glaucescens, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 138. (1859.)

Perigonia glaucescens, Morris, Syn. N. A. Lep. Sm. Ins. p. 160. (1862.)

Habitat.—"St. Domingo." (Walker.)

CALLIOMMA, Boisduval.

29. *lycastus*.

Sphinx lycastus, Cramer, Exot. Vol. 4, p. 180, plate 381, fig. A. (1782.)

Oreus lycastus, Hübner, Verz. Schm. p. 136. (1816.)

Calliomma lycastus, Walker, C. B. M. Lep. part 8, p. 110. (1856.)

Sphinx Galiana, Burm., Sph. Braz. p. 6. (1856.)

Calliomma lycastus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 141. (1859.)

Calliomma lycastus, H-S., Corr. Blatt. p. 57 (21). (1865.)

Calliomma lycastus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 48 (16). (1865.)

Calliomma Galiana, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 49 (17). (1865.)

Habitat.—Tropical Insular District!

Tribe, *Chærocampini*.

OTUS, Hübner.

30. *chærilus*.

Sphinx Chærilus, Cramer, Exot. Vol. 3, p. 91, pl. 247, fig. A. (1782.)

Sphinx azaleæ, Smith, Abb. & Sm. Ins. Ga. Vol. 1, p. 53, pl. 27. (1797.)

Otus Chærilus, Hübner, Verz. Schm. p. 142. (1816.)

Chærocampa Chærilus, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 302 (22). (1839.)

Darapsa Chærilus, Walker, C. B. M. part 8, p. 183. (1856.)

Darapsa Chærilus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 147. (1859.)

Darapsa Chærilus, Morris, Syn. N. A. Lep. Sm. Ins. p. 168. (1862.)

Chærocampa Chærilus, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Otus Chærilus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 81 (49). (1865.)

Habitat.—Atlantic District!

31. *myron*.

Sphinx Myron, Cramer, Exot. Vol. 3, p. 91, pl. 247, fig. C. (1782.)

Sphinx pampinatrix, Smith, Abb. & Sm. Ins. Ga. p. 53, pl. 28. (1797.)

Otus Myron, Hübner, Verz. Schm. p. 142. (1816.)

Otus Cnotus, Hübner, Zutr. 3d Hand. p. 23, fig. 321-322. (1823.)

Chærocampa Pampinatrix, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 301 (21). (1839.)

Darapsa Myron, Walker, C. B. M. part 8, p. 183. (1856.)

- Darapsa Myron*, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 147. (1859.)
Darapsa Myron, Morris, Syn. N. A. Lep. Sm. Ins. p. 168. (1862.)
Cherocampa pampinatrix, Harris, Ins. Inj. Veg. p. 327, pl. 5, fig. 4. (1863.)
Otus Myron, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 81 (49). (1865.)

Habitat.—Atlantic District!

32. **versicolor.**

- Cherocampa versicolor*, Har., C. N. A. Sph. Sill. Jour. Vol. 36, p. 303 (23). (1839.)
Cherocampa? versicolor, Walker, C. B. M. Lep. part 8, p. 131. (1856.)
Darapsa versicolor, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 148. (1859.)
Darapsa versicolor, Morris, Syn. N. A. Lep. Sm. Ins. p. 169. (1862.)
Cherocampa versicolor, Harris, Inj. Veg. new ed. p. 328. (1863.)
Otus versicolor, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 81 (49). 1865.)

Habitat.—Atlantic District!

33. **pholus.**

- Sphinx Pholus*, Cramer, Exot. Vol. 1, p. 137, plate 87, fig. B. (1779.)
Sphinx Pholus, Fabricius, Ent. Syst. p. 363. (1793.)
Darapsa Pholus, Walker, C. B. M. part 8, p. 184. (1856.)
Darapsa Pholus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 148. (1859.)
Darapsa Pholus, Morris, Syn. N. A. Lep. Sm. Ins. p. 169. (1862.)
Otus Pholus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 81 (49). (1865.)

Habitat.—"West Indies." (Cramer.)

DARAPSA, Walker.

34. **rhodocera.**

- Darapsa rhodocera*, Walker, C. B. M. Lep. part 8, p. 184. (1856.)
Darapsa rhodocera, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 149. (1859.)
Darapsa rhodocera, Morris, Syn. N. A. Lep. Sm. Ins. p. 170. (1862.)
Darapsa rhodocera, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 81 (49). (1865.)

Habitat.—"St. Domingo." (Walker.)

PERGESA, Walker.

35. **thorates.**

- Oreus thorates*, Hübner, Zutr. 3d Hund. p. 30, fig. 525—526. (1825.)
Pergesa thorates, Walker, C. B. M. Lep. part 8, p. 151. (1856.)
Pergesa thorates, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 145. (1859.)
Pergesa thorates, Morris, Syn. N. A. Lep. Sm. Ins. p. 166. (1862.)
Pergesa thorates, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 49 (17). (1865.)

Habitat.—Tropical Insular District!

CHEROCAMPA, Duponchel.

36. **gundlachii.**

- Cherocampa gundlachii*, Herrich-Schäffer, Corr. Blatt. p. 149. (1863.)
Cherocampa gundlachi, H-S., Corr. Blatt. p. 58 (22). (1865.)
Cherocampa gundlachii, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 51 (19). (1865.)

Habitat.—Tropical Insular District!

37. **irrorata.**

- Cherocampa irrorata*, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 52 (20), pl. 1, fig. 2. (1865.)

Habitat.—Tropical Insular District!

38. **porcus.**

- Oreus Porcus*, Hübner, Samm. Exot. Sch. Lep. 2, Sph. 3, Leg. 2, Eu. B, Obl. 1. (1806—1824.)
Darapsa Porcus, Walker, C. B. M. Lep. part 8, p. 187. (1856.)
Cherocampa porcus, H-S., Corr. Blatt. p. 58 (22). (1865.)
Cherocampa porcus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 53 (21). (1865.)

Habitat.—Tropical Insular District!

39. *nechus*.

- Sphinx Nechus*, Cramer, Exot. Vol. 2, p. 125, Pl. 178, fig. B. (1779.)
Sphinx Nechus, Fabr., Sp. Ins. Vol. 2, p. 152. (1781.)
Sphinx Nechus, Fabr., Mant. Vol. 2, p. 98. (1787.)
Sphinx Nechus, Fabr., Ent. Syst. Vol. 3, p. 377. (1793.)
Theretra Nechus, Hübner, Verz. Schm. p. 135. (1816.)
Charocampa Chiron, Walker, C. B. M. Lep. Part 8, p. 132. (1856.)
Not Sphinx Chiron, Drury, Exot. Vol. 1, p. 56, Pl. 26, fig. 3. (1770.)
Charocampa Chiron, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 150. (1859.)
Charocampa Chiron, Morris, Syn. N. A. Lep. Sm. Ins. p. 172. (1862.)
Charocampa Nechus, H-S., Corr. Blatt. p. 58 (22). (1865.)
Charocampa Nechus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 50 (18). (1865.)

Habitat.—Tropical Insular District!

40. *nitidula*.

- Charocampa nitidula*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 151. (1859.)
Charocampa nitidula, Morris, Syn. N. A. Lep. Sm. Ins. p. 173. (1862.)

Habitat.—"Mexico." (Clemens.)

41. *versuta*.

- Charocampa versuta*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 152. (1859.)
Charocampa versuta, Morris, Syn. N. A. Lep. Sm. Ins. p. 174. (1862.)

Habitat.—"Mexico." (Clemens.)

42. *procne*.

- Charocampa procne*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 151. (1859.)
Charocampa procne, Morris, Syn. N. A. Lep. Sm. Ins. p. 173. (1862.)

Habitat.—"California." (Clemens.)

43. *tersa*.

- Sphinx tersa*, Linn., "Mant. p. 538."
Sphinx tersa, Drury, Exot. Vol. 1, p. 61, pl. 28, fig. 3. (1770.)
Sphinx tersa, Fabricius, Syst. Ent. s. Ins. Flens. et Lips. p. 547. (1775.)
Sphinx tersa, Fabr. Sp. Ins. Vol. 2, p. 153. (1781.)
Sphinx tersa, Cramer, Exot. Vol. 4, p. 226, pl. 397, fig. C. (1782.)
Sphinx tersa, Fabricius, Mant. Ins. Vol. 2, p. 98. (1787.)
Sphinx tersa, Fab., Ent. Syst. Vol. 3, p. 378. (1793.)
Sphinx tersa, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 75, pl. 38. (1797.)
Theretra tersa, Hübner, Verz. Schm. p. 135. (1816.)
Deilephila tersa, Westw. Drury, Vol. 1, p. 56, pl. 28, fig. 3. (1837.)
Charocampa tersa, Harr., Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 303 (23). (1839.)
Melopsilis tersa, Duncan, Nat. Libr. Vol. 37, pl. 5, fig. 1; pl. 6, fig. 1. (1852.)
Charocampa tersa, Walker, C. B. M. Lep. part 8, p. 131. (1856.)
Philampelus tersa, Burmeister, Sph. Braz. p. 4. (1856.)
Charocampa tersa, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 150. (1859.)
Charocampa tersa, Morris, Syn. N. A. Lep. Sm. Ins. p. 171. (1862.)
Charocampa tersa, H-S., Corr. Blatt. p. 58 (22). (1865.)
Charocampa tersa, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 56 (24). (1865.)

Habitat.—Atlantic and Tropical Insular Districts!

44. *robinsonii*.

- Charocampa Robinsonii*, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 54 (22);
 pl. 1, fig. 2. (1865.)
Charocampa falco, H-S., Corr. Blatt. p. 148. (1863.)
Not Charocampa falco, Walker, C. B. M. Lep. part 8, p. 132. (1856.)
Charocampa falco, H-S., Corr. Blatt. p. 58 (22). (1865.)

Habitat.—Tropical Insular District!

45. *falco*.

- Charocampa falco*, Walker, C. B. M. Lep. part 8, p. 132. (1856.)
Charocampa falco, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 151. (1859.)

Chærocampa falco, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 56 (24). (1865.)
Habitat.—Tropical Continental District!

• **DEILEPHILA**, Ochsenheimer.

46. **intermedia**.

Deilephila intermedia, Kirby, Faun. Amer. Bor. Vol. 4, p. 302. (0000.)
Habitat.—"Canada." (Kirby.)

47. **chamænerii**.

Sphinx Epilobii, Harris, Cat. 530 (1833) 2d ed. 591. (1835.)
Deilephila chamænerii, Harris, Cat. N. A. Sph. Sill. Jour. p. 305 (25). (1839.)
Deilephila chamænerii, Harris, Agassiz, Lake Sup. p. 387, pl. 7, fig. 2. (1856.)
Deilephila galii, Walker, C. B. M. Lep. part 8, p. 166. (1856.)
 Not *Deilephila galii*, Stephens, etc. (Europe.)
Deilephila galii, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 144. (1859.)
Deilephila chamænerii, Morris, Syn. N. A. Lep. Sm. Ins. p. 165. (1862.)
Deilephila chamænerii, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)
Deilephila chamænerii, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 40 (8). (1865.)
Habitat.—Atlantic District!

48. **calverleyi**.

Deilephila Calverleyi, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 56 (24), pl. 1, fig. 4. (1865.)
Habitat.—Tropical Insular District!

49. **lineata**.

Sphinx lineata, Fabricius, Syst. Ent. s. Ins. Flens. et Lips. p. 541. (1775.)
Sphinx daucus, Cramer, Exot. Vol. 2, p. 41, pl. 125, fig. D. (1779.)
Sphinx lineata, Smith, Abb. & Sm., Ins. Ga. p. 77, pl. 39. (1797.)
Sphinx lineata, Donovan, "part 6, pl. 204, fig. 1." (1797.)
Deilephila daucus, Stephens, Ill. Brit. Ent. Haust. Vol. 1, p. 126. (1828.)
Deilephila daucus, Wood, Ind. Ent. p. 246, pl. 53, fig. 27. (1839.)
Deilephila lineata, Harris, Cat. N. A. Sph. Sill. Jour. p. 304 (24). (1839.)
Deilephila daucus, Walker, C. B. M. Lep. part 8, p. 171. (1856.)
Deilephila lineata, Clem., Syn. N. A. S. Jour. A. N. S. Phil. p. 143. (1859.)
Deilephila lineata, Morris, Syn. N. A. Lep. Sm. Ins. p. 164. (1862.)
Deilephila lineata, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)
Deilephila daucus, H.-S., Corr. Blatt. p. 58 (22). (1865.)
Deilephila lineata, Grote, Proc. E. S. Phil. Vol. 4, p. 319. (1865.)
Deilephila lineata, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 58 (26). (1865.)
Habitat.—Atlantic, Western, Central and Tropical Insular Districts.

PHILAMPELUS, Harris.

50. **vitis**.

—, Merian, Ins. Surin, plate 47, fig. 1, (upper figure.) (1719.)
Sphinx vitis, Linn., Mus. Lud. Ulric. p. 354. (1764.)
Sphinx vitis, Linn., Syst. Nat. p. 801, No. 16. (1767.)
Sphinx vitis, Drury, Exot. Vol. 1, p. 60, pl. 28, fig. 1. (1770.)
Sphinx vitis, Fabricius, Syst. Ent. s. Ins. Flens. et Lips. p. 542. (1775.)
Sphinx vitis, W. V., Frontispieces, p. 47. (1776.)
Sphinx fasciatus, Sulzer, Abk. Gesch. Ins. p. 151, pl. 20, fig. 1. (1776.)
Sphinx vitis, Fabricius, Sp. Ins. Vol. 2, p. 147. (1781.)
Sphinx vitis, Cramer, Exot. Vol. 3, pl. 267, fig. C. (1782.)
Sphinx vitis, Fabricius, Mant. Ins. Vol. 2, p. 96. (1787.)
Sphinx vitis, Fabricius, Ent. Syst. Vol. 3, p. 369. (1793.)
Sphinx vitis, Smith, Abb. & Sm. Ins. Ga. Vol. 1, p. 79, pl. 40. (1797.)
Eumorphia elegans jussieuæ, Hübner, Samm. Exot. Sch. Lep. 2, Sph. 3, Leg. 2, Eum. A. Eleg. b. (1806—1824.)
Dupo Jussieuæ, Hübner, Samm. Exot. Sch. Lep. 2, Sph. 3, Leg. 3, Deil. A, Pall. 1. (1806—1824.)
Dupo jussieuæ, Hübner, Verz. Sch. p. 137. (1816.)
Sphinx vitis, Westw. Drury, Vol. 1, p. 54, pl. 28, fig. 1. (1837.)

- Philampelus vitis*, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 299 (19). (1839.)
Philampelus jussieuæ, Walker, C. B. M. Lep. pt. 8, p. 177. (1856.)
Philampelus vitis, Burmeister, Sph. Braz. p. 3. (1856.)
Philampelus vitis, Clem., (larva) Syn. N. A. Sph. Jour. A. N. S. Phil. p. 156. (1859.)
Philampelus jussieuæ, Clem., (imago) Syn. N. A. Sph. Jour. A. N. S. Phil. p. 157. (1859.)
Philampelus jussieuæ, Morris, Syn. N. A. Lep. Sm. Ins. p. 180. (1859.)
Philampelus fasciatus, H.-S., Corr. Blatt. p. 58 (22). (1865.)
Philampelus vitis, Grote, Notes Cub. Sph. Proc. E. S. Phil. pp. 58 (26), 83 (51). (1865.)

Habitat.—Atlantic and Tropical Insular Districts!

51. *linnei*.

- Sphinx vitis*, Cramer, Exot. Vol. 3, pl. 268, fig. E. (1782.)
 Not *Sphinx vitis*, Linn., Merian, etc.
Dupo vitis, Hübner, Verz. Schm. p. 137. (1816.)
Philampelus vitis, Walker, C. B. M. pt. 8, p. 176. (1856.)
Philampelus vitis, Clem., (imago) Syn. N. A. Sph. Jour. A. N. S. Phil. p. 156. (1854.)
Philampelus vitis, Morris, Syn. N. A. Lep. Sm. Ins. p. 179. (1862.)
Philampelus vitis, H.-S., Corr. Blatt. p. 58 (22). (1865.)
Philampelus fasciatus, Grote, Notes Cub. Sph. Proc. E. S. Phil. pp. 59 (27), 84 (52). (1865.)
Philampelus Linnei, Grote & Robinson, pl. 3, fig. 3 ♀. (1865.)

Habitat.—Atlantic and Tropical Insular Districts!

52. *hornbeckiana*.

- Philampelus Hornbeckiana*, Har., Cat. N. A. Sph. Sill. Jour. p. 299 (19). (1839.)
Habitat.—"St. Thomas, W. I." (Harris.)

53. *strenuus*.

- Cherocampa strenua*, Ménétriés, En. Corp. An. Mus. Ac. Sci. Petr. Ins. Lep. 2, p. 132, pl. 12, fig. 3. (1857.)
Philampelus strenuus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 60 (28). (1865.)
Habitat.—"Hayti." (Ménétriés.)

54. *lycaon*.

- Sphinx licaon*, Cramer, Exot. Vol. 1, p. 86, pl. 55, fig. A. (1779.)
Pholus licaon, Hübner, Samm. Exot. Schm. Lep. 2, Sph. 3, Leg. 2, Eum. d, El. 2. (1806—1824.)
Pholus licaon, Hübner, Verz. Schm. p. 134. (1816.)
Philampelus satellitia, (partim?) Walker, C. B. M. Lep. pt. 8, p. 175. (1856.)
 Not *Sphinx satellitia*, Linn., Drury, Harris.
Philampelus satellitia, Fabr., Sph. Braz. p. 3. (1856.)
Philampelus satellitia, H.-S., Corr. Blatt. p. 147. (1863.)
Philampelus satellitia, H.-S., Corr. Blatt. p. 58 (12). (1865.)
Philampelus lycaon, Grote, Notes Cub. Sph. pp. 60 (28), 84 (52). (1865.)
Philampelus lycaon, Grote and Robinson, pl. 3, fig. 4. (1865.)

Habitat.—Tropical Insular District!

55. *satellitita*.

- Sphinx satellitia*, Linn., "Mant. Vol. 1, p. 539."
Sphinx satellitia, Drury, Exot. Vol. 1, p. 63, pl. 29, figs. 1, 2. (1770.)
Sphinx satellitia, Fabricius, Syst. Ent. s. Ins. Flens. et Lips. p. 542. (1775.)
Sphinx satellitia, Fabr., Sp. Ins. Vol. 2, p. 148. (1781.)
Sphinx satellitia, Fabr., Mant. Ins. Vol. 2, p. 96. (1787.)
Sphinx satellitia, Fabr., Ent. Syst. Vol. 3, p. 370. (1793.)
Daphni Pandorus, Hübner, Samm. Exot. Sch. Lep. 2, Sph. 3, Leg. 2, Eum. A. Ele. 2. (1806—1824.)
Sphinx satellitia, Westw. Drury, Vol. 1, p. 57, pl. 29, fig. 1, 2. (1837.)
Philampelus satellitia, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 299 (19) (1839.)

- Philampelus Pandorus*, Walker, C. B. M. Lep. part 8, p. 174. (1856.)
Philampelus satellitia, Clemens, (descrip. imag.) Syn. N. A. Sph. Jour. A. N. S. Phil. p. 154. (1859.)
Philampelus satellitia, Morris, (descrip. imag.) Syn. N. A. Lep. Sm. Ins. p. 176. (1862.)
Philampelus satellitia, Harris, Ins. Inj. Veg. new ed. p. 325, pl. 5, fig. 2. (1863.)
Philampelus satellitia, Grote, Notes Cub. Sph. Proc. E. S. Phil. pp. 61 (29), 84 (52). (1865.)

Habitat.—Atlantic District!

56. **achemon.**

- Sphinx Achemon*, Drury, Exot. Vol. 2, p. 51, pl. 29, fig. 1. (1773.)
Sphinx Crantor, Cramer, Exot. Vol. 2, p. 11, pl. 104, fig. A. (1779.)
Sphinx Crantor, Fabr., Mant. Vol. 2, p. 97. (1787.)
Sphinx Crantor, Fabr., Ent. Syst. Vol. 3, p. 375. (1793.)
Sphinx Crantor, Smith, Abb. & Sm., Ins. Ga. p. 81, pl. 41. (1797.)
Pholus Crantor, Hübner, Verz. Schm. p. 134. ((1816.))
Sphinx achemon, Westw. Drury, Vol. 2, p. 55, pl. 29, fig. 1. (1837.)
Philampelus Achemon, Harris, Cat. N. A. Sph. Sill. Jour. p. 300 (20). (1839.)
Philampelus Achemon, Walker, C. B. M. Lep. part 8, p. 174. (1856.)
Philampelus Achemon, Clem., Syn. N. A. S. Jour. A. N. S. Phil. p. 155. (1859.)
Philampelus Achemon, Morris, Syn. N. A. Lep. Sm. Ins. p. 177. (1862.)
Philampelus Achemon, Harris, Ins. Inj. Veg. new ed. p. 315, fig. 150; pl. 5, fig. 3. (1863.)

Habitat.—Atlantic District!

57. **typhon.**

- Sphinx typhon*, Klug, Neue. Schm. Heft. 1. pl. 3, fig. 1. (1836.)
Philampelus typhon, Walker, C. B. M. Lep. part 8, p. 177. (1856.)
Philampelus typhon, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 155. (1859.)
Philampelus typhon, Morris, Syn. N. A. Lep. Sm. Ins. p. 178. (1862.)

Habitat.—Tropical Continental District!

58. **labruscæ.**

- Sphinx labruscæ*, Linn., Mus. Lud. Ulr. p. 352. (1764.)
Sphinx labruscæ, Cramer, Exot. Vol. 2, p. 133, pl. 184, fig. A. (1779.)
Sphinx labruscæ, Fabr. Sp. Ins. Vol. 2, p. 152. (1781.)
Sphinx labruscæ, Fabr., Mant. Ins. Vol. 2, p. 98. (1787.)
Sphinx labruscæ, Fabr., Ent. Syst. Vol. 3, p. 377. (1793.)
Sphinx labruscæ, Clerck, "Icon. pl. 47, fig. 3."
Eumorpha elegans Labruscæ, Hübner, Samm. Exot. Sch. Lep. 2, Sph. 3, Leg. 2. Eum. A. Ele. a. (1806—1824.)
Arges labruscæ, Hübner, Verz. Schm. p. 134. (1816.)
Philampelus labruscæ, Walker, C. B. M. Lep. part 8, p. 178. (1856.)
Philampelus labruscæ, Burmeister, Sph. Braz. p. 2. (1856.)
Philampelus labruscæ, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 156. (1859.)
Philampelus labruscæ, Morris, Syn. N. A. Lep. Sm. Ins. p. 178. (1862.)
Philampelus labruscæ, H.-S., Corr. Blatt. p. 58 (22). (1865.)
Philampelus labruscæ, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 62 (30). (1865.)

Habitat.—Tropical Insular District!

PACHYLIA, Boisduval.

59. **ficus.**

- Sphinx ficus*, Linn., Mus. Lud. Ulric. p. 352. (1764.)
Sphinx ficus, Linn., Syst. Nat. p. 800, No. 15. (1766.)
Sphinx ficus, Clerck, "Icon. pl. 49, fig. 2."
Sphinx ficus, Drury, Exot. Vol. 2, p. 44, pl. 26, fig. 1. (1773.)
Sphinx ficus, Fabricius, Syst. Ent. s. Ins. Flens. et. Lips. p. 540. (1775.)
Sphinx ficus, Fabricius, Sp. Ins. Vol. 2, p. 145. (1781.)
Sphinx ficus, Cramer, Exot. Vol. 3, p. 88, pl. 246, fig. E. (1782.)
Sphinx ficus, Fabricius, Ent. Syst. p. 366. (1793.)
Pholus ficus, Hübner, Verz. Schm. p. 134. (1816.)
Sphinx ficus, Westwood, ed. Drury, Exot. Vol. 2, p. 48, pl. 26, fig. 1. (1837.)

- Pachylia ficus*, Walker, (partim) C. B. M. Lep. part 8, p. 189. (1856.)
Deilephila ficus, Burm., Sph. Braz. p. 5. (1856.)
Charocampa Crameri, Ménétériés, En. An. Acad. Petr. Lep. pt. 2, p. 133. (1857.)
Pachylia ficus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 158. (1859.)
Pachylia ficus, Morris, Syn. N. A. Lep. Sm. Ins. p. 181. (1862.)
Pachylia ficus, H-S., Corr. Blatt. p. 58 (22). (1865.)
Pachylia ficus, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 62 (30). (1865.)

Habitat.—Tropical Insular District!

60. *inornata*.

- Sphinx ficus*, Cramer, Exot. Vol. 4, p. 216, pl. 394, fig. D. (1782.)
 Not *Sphinx ficus*, Linn., etc.
Charocampa ficus, Ménétériés, En. An. Acad. Petr. Lep. pt. 2, p. 133. (1857.)
Pachylia inornata, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 159. (1859.)
Pachylia inornata, Morris, Syn. N. A. Lep. Sm. Ins. p. 182. (1862.)
Pachylia inornata, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 63 (31). (1865.)

Habitat.—Tropical Insular District!

61. *resumens*.

- Pachylia resumens*, Walker, C. B. M. part 8, p. 190. (1856.)
Pachylia resumens, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 159. (1859.)
Pachylia resumens, Morris, Syn. N. A. Lep. Sm. Ins. p. 183. (1862.)
Pachylia resumens, H-S., Corr. Blatt. p. 58 (22). (1865.)
Pachylia resumens, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 63 (31). (1865.)

Habitat.—Tropical Insular District!

62. *inconspicua*.

- Pachylia inconspicua*, Walker, C. B. M. part 8, p. 190. (1856.)
Pachylia inconspicua, Clem., Syn. N. A. S. Jour. A. N. S. Phil. p. 160. (1859.)
Pachylia inconspicua, Morris, Syn. N. A. Lep. Sm. Ins. p. 183. (1862.)

Habitat.—"Jamaica." (Walker.)

AMBULYX, Boisduval.

63. *gannascus*.

- Sphinx gannascus*, Stoll Sup. Cram. Exot. pt. 5, p. 157, pl. 35, figs. 3—3 B. (1790.)
Amplypterus ganascus, Hübner, Verz. Schm. p. 133. (1816.)
Ambulyx ganascus, Walker, C. B. M. part 8, Lep. p. 121. (1856.)
Ambulyx gannascus, Burmeister, Sph. Braz. p. 15. (1856.)
Ambulyx ganascus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 153. (1859.)
Ambulyx ganascus, Morris, Syn. N. A. Lep. Sm. Ins. p. 183. (1862.)
Ambulyx ganascus, H-S., Corr. Blatt. p. 57 (21). (1865.)
Ambulyx ganascus, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 64 (32). (1865.)

Habitat.—Tropical Insular District!

64. *strigilis*.

- Sphinx strigilis*, Linn., "Mant. Vol. 1, p. 538."
Sphinx strigilis, Drury, Exot. Vol. 1, p. 62, pl. 28, fig. 4. (1770.)
Sphinx strigilis, Fabricius, Syst. Ent. s. Ins. Flens. et. Lips. p. 539. (1775.)
Sphinx strigilis, Fabr., Sp. Ins. Vol. 2, p. 144. (1781.)
Sphinx strigilis, Cramer, Exot. Vol. 2, p. 14, pl. 106, fig. B. (1782.)
Sphinx strigilis, Fabricius, Ent. Syst. Vol. 3, p. 364. (1793.)
Pholus strigilis, Hübner, Verz. Schm. p. 134. (1816.)
Sphinx strigilis, Westw. Drury, Vol. 1, p. 57, pl. 28, fig. 4. (1837.)
Ambulyx strigilis, Walker, C. B. M. part 8, p. 121. (1856.)
Ambulyx strigilis, Burmeister, Sph. Braz. p. 14. (1856.)
Ambulyx strigilis, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 152. (1859.)
Ambulyx strigilis, Morris, Syn. N. A. Lep. Sm. Ins. p. 175. (1862.)
Ambulyx strigilis, H-S., Corr. Blatt. p. 57 (21). (1865.)
Ambulyx strigilis, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 64 (32). (1865.)

Habitat.—Tropical Insular District!

Tribe, *Smerinthini*.**SMERINTHUS**, Latreille.**65. jamaicensis.***Sphinx ocellatus Jamaicensis*, Drury, Exot. Vol. 2, p. 43, pl. 25, fig. 2, 3. (1773.)*Smerinthus Jamaicensis*, Westw., Drury, Vol. 2, p. 47, pl. 25, fig. 2, 3. (1837.)*Habitat*.—"Jamaica." (Drury.)**66. geminatus.***Smerinthus geminatus*, Say, Am. Ent. Vol. 1, p. 25, pl. 12. (1824.)*Smerinthus geminata*, Harr., Cat. N. A. S. Sill. Jour. Vol. 36, p. 291 (11). (1839.)*Smerinthus geminatus*, Walker, C. B. M. part 8, p. 246. (1856.)?*Smerinthus geminatus*, Say, Am. Ent. Lec. Ed. p. 25, pl. 12. (1859.)*Smerinthus geminatus*, Clemens, (descrip. imago) Syn. N. A. Sph. Jour. A. N. S. Phil. p. 183. (1859.)*Smerinthus geminatus*, Morris, Syn. N. A. Lep. Sm. Ins. p. 210. (1862.)*Habitat*.—Atlantic District!**67. cerisii.***Smerinthus Cerisii*, Kirby, Faun. Am. Bor. Vol. 4, p. 301, pl. 4, fig. 4. (1837.)*Smerinthus Cerisii*, Grote, Notes Cub. Sp. Pr. E. S. Phil. Vol. 5, p. 40 (8). (1865.)*Habitat*.—Atlantic District!**68. ophthalmicus.***Smerinthus ophthalmicus*, Boisd., Am. Soc. Ent. Fr. t. 3. 3ieme Ser. 32.*Smerinthus ophthalmicus*, Clem., Syn. N. A. S. Jour. A. N. S. Phil. p. 184. (1859.)*Smerinthus ophthalmicus*, Morris, Syn. N. A. Lep. Sm. Ins. p. 211. (1862.)*Habitat*.—Western District!**69. pavoninus.***Paonias pavonina*, Geyer, Zutr. 5th Hund. p. 12, figs. 835, 836. (1837.)*Smerinthus pavoninus*, Grote & Robinson. (1865.)*Habitat*.—"Pennsylvania." (Geyer.)**70. excæcatus.***Sphinx excæcata*, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 49, pl. 25. (1797.)*Paonias excæcatus*, Hübner, Verz. Schm. p. 142. (1816.)*Smerinthus excæcata*, Harris, C. N. A. S. Sill. Jour. Vol. 36, p. 290 (10). (1839.)*Smerinthus excæcatus*, Walker, C. B. M. Lep. part 8, p. 246. (1856.)*Smerinthus excæcatus*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 182. (1859.)*Smerinthus excæcatus*, Morris, Syn. N. A. Lep. Sm. Ins. p. 208. (1862.)*Smerinthus excæcata*, Harris, Ins. Inj. Veg. new ed. p. 327, fig. 155. (1865.)*Habitat*.—Atlantic District!**71. myops.***Sphinx Myops*, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 51, pl. 26. (1797.)*Paonias Myops*, Hübner, Verz. Schm. p. 142. (1816.)*Smerinthus rosacæarum*, Boisdual, Sp. Gen. pl. 15, fig. 4. (1836.)*Smerinthus Myops*, Harris, C. N. A. Sph. Sill. Jour. Vol. 36, p. 291 (11). (1839.)*Smerinthus Myops*, Walker, C. B. M. Lep. part 8, p. 245. (1856.)*Smerinthus Myops*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 181. (1859.)*Smerinthus Myops*, Morris, Syn. N. A. Lep. Sm. Ins. p. 207. (1862.)*Smerinthus Myops*, Harris, Ins. Inj. Veg. new ed. p. 328. (1865.)*Habitat*.—Atlantic District!**72. astylus.***Sphinx Astylus*, Drury, Exot. Vol. 2, p. 45, pl. 26, fig. 2. (1773.)*Sphinx Io*, Boisdual, "Guér. Icon. Règn. Anim. Ins. pl. 84."*Smerinthus integerrima*, Harris, "Cat. Ins. Mass. Hitch. Rep. Geol."*Smerinthus Io*, Boisd., Griff. & Pidg. Cuvier, Vol. 2, pl. 8, fig. 2. (1835.)*Smerinthus Io*, Wilson, Treat. Ent. Brit. Encyc. p. 246, pl. 236, fig. 5. (1835.)

Smerinthus Astylus, Westw. Drury, Vol. 2, p. 48, pl. 26, fig. 2. (1837.)
Smerinthus Astylus, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 290 (10). (1839.)

Smerinthus Astylus, Walker, C. B. M. Lep. part 8, p. 245. (1856.)
Smerinthus Astylus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 184. (1859.)
Smerinthus Astylus, Morris, Syn. N. A. Lep. Sm. Ins. p. 211. (1862.)

Habitat.—Atlantic District!

73. *modestus*.

Smerinthus modesta, Harr., Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 292 (12). (1839.)
Smerinthus modesta, Harris, Agassiz, Lake Sup. p. 388, pl. 7, fig. 7. (1850.)
Smerinthus modestus, Walker, C. B. M. Lep. part 8, p. 248. (1856.)
Smerinthus modesta Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 183. (1859.)
Smerinthus modesta, Morris, Syn. N. A. Lep. Sm. Ins. p. 210. (1862.)

Habitat.—Atlantic District!

CRESSONIA, Grote & Robinson.

74. *juglandis*.

Sphinx juglandis, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 57, pl. 29. (1797.)
Amorpha dentata Juglandis, Hübner, Samm. Exot. Schm. Vol. 1, Lep. 2, Sph. 3, Leg. 4, Am. B, Den. b. (1806—1824.)
Polypitichus juglandis, Hübner, Verz. Schm. p. 141. (1816.)
Smerinthus juglandis, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 292 (12). (1839.)
Smerinthus juglandis, Walker, C. B. M. Lep. part 8, p. 247. (1856.)
Smerinthus juglandis, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 185. (1859.)
Smerinthus juglandis, Morris, Syn. N. A. Lep. Sm. Ins. p. 213. (1862.)
Smerinthus juglandis, Harris, Ins. Inj. Veg. new ed. p. 528. (1865.)
Cressonia juglandis, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

Tribe, *Sphingini*.

PSEUDOSPHEINX, Burmeister.

75. *tetrio*.

Sphinx tetrio, Linn., "Mant. Vol. 1, p. 538."
Sphinx tetrio, Fabricius, Syst. Ent. s. Ins. Flens. et. Lips. p. 540. (1775.)
Sphinx tetrio, Fabr., Sp. Ins. Vol. 2, p. 145. (1781.)
Sphinx hasdrubal, Cramer, Exot. Vol. 3, p. 90, pl. 246, fig. F. (1782.)
Sphinx tetrio, Fabr., Mant. Vol. 2, p. 96. (1787.)
Sphinx tetrio, Fabr., Ent. Syst. Vol. 3, p. 366. (1793.)
Hyloicus Hasdrubal, Hübner, Verz. Schm. p. 139. (1816.)
Sphinx Asdrubal, Poey, Cent. Lep. Cuba. (1832.)
Macrosila Hasdrubal, Walker, C. B. M. part 8, p. 202. (1856.)
Sphinx? tetrio, Walker, C. B. M. part 8, p. 263. (1856.)
Pseudosphinx tetrio, Burmeister, Sph. Braz. p. 8. (1856.)
Macrosila Hasdrubal, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 161. (1859.)
Macrosila Hasdrubal, Morris, Syn. N. A. Lep. Sm. Ins. p. 184. (1862.)
Macrosila Asdrubal, H-S., Corr. Blatt. p. 59 (23). (1865.)
Pseudosphinx tetrio, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 64 (32). (1865.)

Habitat.—Tropical Insular District!

AMPHONYX, Poey.

76. *antæus*.

Sphinx Antæus, Drury, Exot. Vol. 2, p. 43, pl. 25, fig. 2. (1773.)
Sphinx Jatropha, Fabricius, Sp. Ins. Vol. 2, p. 143. (1781.)
Sphinx Medor, Cramer, Exot. Vol. 4, p. 215, pl. 394, fig. A. (1782.)
Sphinx Jatropha, Fabricius, Ent. Syst. p. 362. (1793.)
Cocytius Jatropha, Hübner, Verz. Schm. p. 140. (1816.)
Amphonyx Antæus, Poey, Cent. Lep. Cuba, Decade 1. (1832.)
Sphinx Antæus, Westw. Drury, Vol. 2, p. 47, pl. 25, fig. 2.
Macrosila Antæus, (partim) Walker, C. B. M. part 8, p. 200. (1856.)
Sphinx Jatropha, Burmeister, Sph. Braz. p. 9. (1856.)

Macrosila Antæus, (partim) Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 162. (1859.)

Macrosila Antæus, (partim) Morris, Syn. N. A. Lep. Sm. Ins. p. 186. (1862.)

Macrosila Anthæus, H-S., Corr. Blatt. p. 59 (23). (1865.)

Amphonyx Antæus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 66 (34). (1865.)

Habitat.—Tropical Insular District!

77. *duponchel*.

Amphonyx Duponchel, Poey, Cent. Lepid. Cuba. (1832.)

Macrosila Antæus, (partim) Walker, C. B. M. part 8, Lep. p. 200. (1856.)

Not *Sphinx Antæus*, Drury, etc.

Macrosila Antæus, (partim) Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 162. (1859.)

Macrosila Antæus, (partim) Morris, Syn. N. A. Lep. Sm. Ins. p. 186. (1862.)

Macrosila duponchel, H-S., Corr. Blatt. p. 59 (23). (1865.)

Amphonyx duponchel, Grote, Notes Cub. Sph. Pr. E. S. Phil. p. 67 (35). (1865.)

Habitat.—Tropical Insular District!

78. *cluentius*.

Sphinx cluentius, Cramer, Exot. Vol. 1, p. 124, pl. 78, fig. B. (1779.)

Sphinx cluentius, Cramer, Exot. Vol. 2, p. 43, pl. 126, fig. A. (1779.)

Phlegethontius cluentius, Hübner, Verz. Schm. p. 140. (1816.)

Amphonyx cluentius, Poey, Cent. Lepid. Cuba, Decade 1. (1832.)

Macrosila cluentius, Walker, C. B. M. part 8, p. 200. (1856.)

Macrosila cluentius, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 163. (1859.)

Macrosila cluentius, Morris, Syn. N. A. Sph. Sm. Ins. p. 186. (1862.)

Macrosila cluentius, H-S., Corr. Blatt. p. 59 (23). (1865.)

Amphonyx cluentius, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 3, p. 67 (35). (1865.)

Habitat.—"Cuba." (Poey, H-S.)

MACROSILA, Boisduval, emend. Grote.

79. *rustica*.

Sphinx rustica, Fabricius, Syst. Ent. s. Ins. Flens. et. Lips. p. 540. (1775.)

Sphinx rustica, Sulzer, Ab. Gesch. Ins. pl. 20, fig. 2. (1775.)

Sphinx rustica, Fab., Sp. Ins. Vol. 2, p. 145. (1781.)

Sphinx rustica, Cramer, Exot. p. 21, pl. 301, fig. A. (1782.)

Sphinx rustica, Fab., Mant. Ins. Vol. 2, p. 95. (1787.)

Sphinx rustica, Fab., Ent. Syst. Vol. 3, p. 366. (1793.)

Sphinx chionanthi, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 67, pl. 34. (1797.)

Cocytius rustica, Hübner, Samm. Exot. Schm. Lep. 2, Sph. 3, Leg. 4, Mand. B, Pond. 2. (1806—1824.)

Cocytius rustica, Hübner, Verz. Schm. p. 140. (1816.)

Macrosila rustica, Walker, C. B. M. part 8, p. 199. (1856.)

Protoparce rustica, Burmeister, Sph. Braz. p. 7. (1856.)

Macrosila rustica, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 163. (1859.)

Macrosila rustica, Morris, Syn. N. A. Lep. Sm. Ins. p. 187. (1862.)

Sphinx rustica, H-S., Corr. Blatt. p. 59 (23). (1865.)

Sphinx rustica, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 68 (36). (1865.)

Habitat.—Atlantic and Tropical Insular Districts!

80. *ochus*.

Sphinx ochus, Klug, Neue. Schm. Heft. 1, p. 4, pl. 3, fig. 2. (1836.)

Macrosila instita, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 164. (1859.)

Macrosila instita, Morris, Syn. N. A. Lep. Sm. Ins. p. 187. (1862.)

Macrosila ochus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 68 (36). (1865.)

Habitat.—"Mexico," (Klug.) "Honduras," (Clemens.)

81. *carolina*.

Sphinx carolina, Linn., Mus. Lud. Ulric. p. 346. (1764.)

Sphinx carolina, Drury, Ill. Exot. Ins. Vol. 1, p. 52, pl. 25, fig. 1. (1770.)

Sphinx carolina, Fabricius, Syst. s. Ins. Flens. et. Lips. p. 539. (1775.)

Sphinx carolina, Fabr., Sp. Ins. Vol. 2, p. 144. (1781.)

- Sphinx carolina*, Fabr., Mant. Ins. Vol. 2, p. 94. (1787.)
Sphinx carolina, Fabr., Ent. Syst. Vol. 3, p. 363. (1793.)
Sphinx carolina, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 65, pl. 33. (1797.)
Manduca obscura carolina, Hübner, Samm. Exot. Schm. Lep. 2, Sph. 3, Leg. 3, Obs. b, Mand. B. (1806—1824.)
Phlegethontius carolina, Hübner, Verz. Schm. p. 140. (1816.)
Sphinx carolina, Stephens, Ill. Brit. Ent. Haust. Vol. 1, p. 118. (1828.)
Sphinx carolina, Westw. Drury, Vol. 1, p. 47, pl. 25, fig. 1. (1837.)
Sphinx carolina, Wood, Ind. Ent. p. 246, pl. 53, fig. 22. (1839.)
Sphinx carolina, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 294 (14). (1839.)
Sphinx carolina, Walker, C. B. M. part 8, Lep. p. 216. (186.)
Macrosila carolina, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 165. (1859.)
Macrosila carolina, Morris, Syn. N. A. Lep. Sm. Ins. p. 189. (1862.)
Sphinx carolina, Harris, Ins. Inj. Veg. new ed. p. 322, fig. 145—147. (1863.)
Sphinx carolina, H.-S., Corr. Blatt. p. 59 (21). (1865.)
Sphinx carolina, Grote, Notes Cub. Sp. Fr. E. S. Phil. Vol. 5, p. 69 (37). (1865.)
Habitat.—Atlantic and Tropical Insular Districts!

82. *quinquemaculata*.

- "*Sphinx quinquemaculatus*, Haworth." (Auth. Stephens.)
Sphinx carolina, Donovan, "part II, plate 361." (1804.)
Phlegethontius Celeus, Hübner, Samm. Exot. Schm. Lep. 2, Sph. 3, Leg. 4, Mand. B, Pond. 3. (1806—1824.)
Sphinx quinquemaculatus, Stephens, Ill. Brit. Ent. Haust. Vol. 1, p. 119. (1828.)
Sphinx quinquemaculatus, Wood, Ind. Ent. p. 246, pl. 53, fig. 23. (1839.)
Sphinx quinquemaculata, Walker, C. B. M. part 8, Lep. p. 217. (1856.)
Macrosila quinquemaculata, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 166. (1859.)
Macrosila quinquemaculata, Morris, Syn. N. A. Lep. Sm. Ins. p. 190. (1862.)
Sphinx quinquemaculatus, Harris, Ins. Inj. Veg. new ed. p. 322, fig. 142—144. (1863.)
Sphinx quinquemaculata, Fitch, Ninth Report, pl. 4, fig. 1. (1865.)
Habitat.—Atlantic District!

83. *cingulata*.

- Sphinx convolvuli*, Drury, Exot. Vol. 1, p. 54, pl. 25, fig. 4. (1770.)
 Not *Sphinx convolvuli*, Linnæus, (Europe).
Sphinx cingulata, Fabricius, Syst. Ent. s. Ins. Flens. et. Lips. p. 545. (1775.)
Sphinx cingulata, Fabricius, Sp. Ins. Vol. 2, p. 151. (1781.)
Sphinx convolvuli, Cramer, Exot. Vol. 3, p. 55, pl. 225, fig. D. (1782.)
Sphinx cingulata, Fabricius, Mant. Ins. Vol. 2, p. 97. (1787.)
Sphinx cingulata, Fabricius, Ent. Syst. p. 375. (1793.)
Sphinx convolvuli, Smith, Abb. & Sm. Ins. Ga. Vol. 1, p. 53, pl. 32. (1797.)
Sphinx Druræi, Donovan, "Brit. Ins. p. 14, pl. 469." (1810.)
Agrius cingulatus, Hübner, Samm. Exot. Schm. Lep. 2, Sph. 3, Leg. 4, Mand. B, Pond 4. (1806—1824.)
Agrius cingulatus, Hübner, Verz. Schm. p. 140. (1816.)
Sphinx Druræi, Stephens, Ill. Brit. Ent. Haust. Vol. 1, p. 120. (1828.)
Sphinx cingulata, West. Drury, Vol. 1, p. 49, pl. 25, fig. 4. (1837.)
Sphinx Druræi, Wood, Ind. Ent. p. 246, pl. 53, fig. 24. (1839.)
Sphinx cingulata, Harr., Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 249 (13). (1839.)
Sphinx cingulata, Walker, C. B. M. Lep. part 8, p. 215. (1856.)
Sphinx cingulata, Burmeister, Sph. Braz. p. 12. (1856.)
Macrosila cingulata, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 164. (1859.)
Macrosila cingulata, Morris, Syn. N. A. Lep. Sm. Ins. p. 188. (1862.)
Sphinx cingulata, Grote, Notes Cub. Sph. Fr. E. S. Phil. Vol. 5, p. 69 (37). (1865.)
Habitat.—Atlantic and Tropical Insular Districts!

DILUDIA, Grote & Robinson.

84. *brontes*.

- Sphinx Brontes*, Drury, Exot. Vol. 2, p. 52, pl. 29, fig. 4. (1773.)
Sphinx Brontes, Westw. Drury, Vol. 2, p. 56, pl. 29, fig. 4. (1837.)
Sphinx brontes, H.-S., Corr. Blatt. p. 59 (23). (1865.)

Sphinx Brontes, Grote, Notes Cub. Sph. Pr. E. S. Phil. Vol. 5, p. 69 (37) pl. 1, fig. 5. (1865.)

Diludia Brontes, Grote & Robinson. (1865.)

Non aliorum.

Habitat.—Tropical Insular District!

85. *florestan.*

Sphinx Florestan, Cramer, Exot. Vol. 4, p. 216, pl. 394, fig. B. (1782.)

Cocytius Forestan, Hübner, Verz. Schm. p. 140. (1816.)

Macrosila Forestan, Walker, C. B. M. Lep. part 8, p. 203. (1856.)

Sphinx Florestan, Burmeister, Sph. Braz. p. 10. (1856.)

Macrosila Forestan, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 167. (1865.)

Macrosila Forestan, Morris, Syn. N. A. Lep. Sm. Ins. p. 191. (1862.)

Diludia Florestan, Grote & Robinson. (1865.)

Habitat.—"Honduras." (Clemens.)

86. *collaris.*

Macrosila collaris, Walker, C. B. M. Lep. part 8, p. 201. (1856.)

Macrosila collaris, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 161. (1859.)

Macrosila collaris, Morris, Syn. N. A. Lep. Sm. Ins. p. 184. (1862.)

Diludia collaris, Grote & Robinson. (1865.)

Habitat.—"Jamaica;" "St. Domingo." (Walker.)

SYZYGIA, Grote & Robinson.

87. *afflicta.*

Sphinx afflicta, Grote, Notes Cub. Sph. Pr. E. S. Phil. p. 71 (39). (1865.)

Syzygia afflicta, Grote & Robinson, pl. 3, fig. 5, ♂. (1865.)

Habitat.—Tropical Insular District!

DAREMMA, Walker.

88. *repentinus.*

Sphinx Brontes, Boisd., Sp. Gén. pl. 15, fig. 6. (1832.)

Not *Sphinx Brontes*, Drury, H.-S., Grote.

Macrosila Brontes? Walker, C. B. M. part 8, p. 199. (1856.)

Daremma undulosa, Walker, C. B. M. Lep. part 8, p. 231. (1856.)

Ceratonia repentinus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 180. (1859.)

Ceratonia repentinus, Morris, Syn. N. A. Lep. Sm. Ins. p. 206. (1862.)

Ceratonia repentinus, Grote, Notes Cub. Sph. Pr. E. S. Phil. p. 39 (7). (1865.)

Sphinx repentinus, Grote, Notes Cub. Sph. Pr. E. S. Phil. p. 72 (40). (1865.)

Daremma repentinus, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

CERATOMIA, Harris.

89. *amyntor.*

Agrius Amyntor, Hübner, Samm. Exot. Schm. Vol. 2, Lep. 2, Sph. 3, Leg. 4, Mand. B, Pond. 4. (1806—1824.)

Ceratonia quadricornis, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 293 (13). (1839.)

Ceratonia quadricornis, Walker, C. B. M. Lep. part 8, p. 258. (1856.)

Ceratonia quadricornis, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 179. (1859.)

Ceratonia quadricornis, Morris, Syn. N. A. Lep. Sm. Ins. p. 205. (1862.)

Ceratonia quadricornis, Harris, Ins. Inj. Veg. new ed. p. 323, fig. 148. (1883.)

Ceratonia Amyntor, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

SPHINX, Linnæus.

90. *leucophæata.*

Sphinx leucophæata, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 163. (1859.)

Sphinx leucophæata, Morris, Syn. N. A. Lep. Sm. Ins. p. 193. (1862.)

Habitat.—"Texas." (Clemens.)

91. *jasminearum*.

- Sphinx jasminearum*, Boisd., Griff. & Pidg. Cuvier, Vol. 2, pl. 83, fig. 1. (1832.)
Sphinx jasminearum, Wilson, Treat. Ent. in Encyc. Brit. pl. 236, fig. 5. (1835.)
Sphinx jasminearum, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 173. (1859.)
Sphinx jasminearum, Morris, Syn. N. A. Lep. Sm. Ins. p. 198. (1862.)

Habitat.—"New York;" "Pennsylvania." (Clemens.)

92. *chersis*.

- Lethia chersis*, Hübner, Samm. Exot. Schm. Vol. 2, Lep. 2, Sph. 3, Leg. 4, Mand. B. Pond. 5. (1806—1824.)
Sphinx cinerea, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 295 (15). (1839.)
Sphinx cinerea, Walker, C. B. M. Lep. part 8, p. 217. (1856.)
Sphinx cinerea, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 169. (1859.)
Sphinx cinerea, Morris, Syn. N. A. Lep. Sm. Ins. p. 194. (1862.)
Sphinx cinerea, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)
Sphinx chersis, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

93. *drupiferarum*.

- Sphinx drupiferarum*, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 71, pl. 36. (1797.)
Lethia drupiferarum, Hübner, Verz. Schm. p. 141. (1816.)
Sphinx drupiferarum, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 294 (14). (1839.)
Sphinx drupiferarum, Walker, C. B. M. Lep. part 8, p. 218. (1856.)
Sphinx drupiferarum, Clem., Syn. N. A. S. Jour. A. N. S. Phil. p. 173. (1859.)
Sphinx drupiferarum, Morris, Syn. N. A. Lep. Sm. Ins. p. 197. (1862.)
Sphinx drupiferarum, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Habitat.—Atlantic District!

94. *kalmia*.

- Sphinx Kalmia*, Smith, Abb. & Sm., Ins. Ga. Vol. 1, p. 73, pl. 37. (1797.)
Lethia Kalmia, Hübner, Verz. Schm. p. 141. (1816.)
Sphinx Kalmia, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 295 (15). (1839.)
Sphinx Kalmia, Walker, C. B. M. Lep. part 8, p. 218. (1856.)
Sphinx Kalmia, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 171. (1859.)
Sphinx Kalmia, Morris, Syn. N. A. Lep. Sm. Ins. p. 196. (1862.)
Sphinx Kalmia, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Habitat.—Atlantic District!

95. *gordius*.

- Sphinx Gordius*, Cramer, Exot. Vol. 3, p. 91, pl. 247, fig. B. (1782.)
Lethia Gordius, Hübner, Verz. Schm. p. 141. (1816.)
Sphinx poecila, Stephens, Ill. Brit. Ent. Haust. Vol. 1, p. 222. (1828.)
Sphinx Gordius, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 295 (15). (1839.)
Sphinx poecila, Wood, Ind. Ent. p. 246, pl. 53, fig. 26. (1839.)
Sphinx Gordius, Walker, C. B. M. Lep. part 8, p. 218. (1856.)
Sphinx Gordius, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 173. (1859.)
Sphinx Gordius, Morris, Syn. N. A. Lep. Sm. Ins. p. 198. (1862.)
Sphinx Gordius, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Habitat.—Atlantic District!

96. *luscitiosa*.

- Sphinx luscitiosa*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 172. (1859.)
Sphinx luscitiosa, Morris, Syn. N. A. Lep. Sm. Ins. p. 197. (1862.)

Habitat.—Atlantic District!

97. *eremitus*.

- Agrius eremitus*, Hübner, Samm. Exot. Schm. Vol. 2, Lep. 2, Sph. 3, Leg. 4, Mand. B. Pond. 4. (1806—1824.)
Sphinx sordida, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 296 (16). (1839.)
Sphinx sordida, Walker, C. B. M. Lep. part 8, p. 219. (1856.)
Sphinx sordida, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 169. (1859.)

Sphinx sordida, Morris, Syn. N. A. Lep. Sm. Ins. p. 194. (1862.)

Sphinx eremitus, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

DOLBA, Walker.

98. **hylæus**.

Sphinx Hylæus, Drury, Exot. Vol. 2, p. 45, pl. 26, fig. 3. (1773.)

Sphinx Hylæus, Cramer, Exot. Vol. 2, p. 16, pl. 107, fig. C. (1779.)

Sphinx Hylæus, Fabricius, Sp. Ins. Vol. 2, p. 149. (1781.)

Sphinx Hylæus, Fabricius, Mant. Ins. Vol. 2, p. 97. (1787.)

Sphinx Hylæus, Fabricius, Ent. Syst. Vol. 3, p. 373. (1793.)

Sphinx Prini, Smith, Abb. & Sm. Ins. Ga. Vol. 1, p. 69, pl. 35. (1797.)

Hyloicus Hylæus, Hübner, Verz. Schm. p. 139. (1816.)

Sphinx Hylæus, Westw. Drury, Vol. 2, p. 49, pl. 26, fig. 3. (1837.)

Sphinx Hylæus, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 296 (16). (1839.)

Dolba Hylæus, Walker, C. B. M. Lep. part 8, p. 230. (1856.)

Dolba Hylæus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 178. (1859.)

Dolba Hylæus, Morris, Syn. N. A. Lep. Sm. Ins. p. 203. (1862.)

Sphinx Hylæus, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Habitat.—Atlantic District!

HYLOICUS, Hübner.

99. **plebeia**.

Sphinx plebeia, Fabricius, Gen. Ins. Kilias, p. 273. (1776.)

Sphinx plebeia, Fabricius, Sp. Ins. Vol. 2, p. 146. (1781.)

Sphinx plebeia, Fabricius, Mant. Ins. p. 95. (1787.)

Sphinx plebeia, Fabricius, Ent. Syst. p. 367. (1793.)

Sphinx plebeia, Steph., Ill. Brit. Ent. Haust. Vol. 1, p. 222. (1828.)

Sphinx plebeia, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 296 (16). (1839.)

Sphinx plebeia, Wood, Ind. Ent. p. 246, pl. 53, fig. 27. (1839.)

Anceryx plebeia, Walker, C. B. M. Lep. part 8, p. 224. (1856.)

Sphinx plebeia, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 170. (1859.)

Sphinx plebeia, Morris, Syn. N. A. Lep. Sm. Ins. p. 195. (1862.)

Hyloicus plebeia, Grote & Robinson. (1865.)

Habitat.—Atlantic District!

100. **poeyi**.

Erinnyis Poeyi, Gundlach, MSS. Grote, Ann. N. Y. Lyc. Nat. Hist. (1865.)

Hyloicus Poeyi, Grote, Ann. N. Y. Lyc. Nat. Hist. (1865.)

Habitat.—Tropical Insular District!

101. **coniferarum**.

Sphinx coniferarum, Smith, Abb. & Sm. Ins. Ga. p. 81, pl. 41. (1797.)

Hyloicus coniferarum, Hübner, Verz. Schm. p. 139. (1816.)

Non aliorum.

Habitat.—"Georgia." (Abbot.)

ELLEMA, Clemens.

102. **harrisi**.

Sphinx coniferarum, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 297 (17). (1839.)

Anceryx coniferarum, Walker, C. B. M. Lep. part 8, p. 224. (1856.)

Ellema Harrisi, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 188. (1859.)

Ellema Harrisi, Morris, Syn. N. A. Lep. Sm. Ins. p. 216. (1862.)

Sphinx coniferarum, Harris, Ins. Inj. Veg. new ed. p. 328. (1863.)

Habitat.—Atlantic District!

LAPARA, Walker.

103. **bombycoides**.

Lapara bombycoides, Walker, C. B. M. Lep. part 8, p. 233. (1856.)

Lapara bombycoides, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 187. (1859.)

Lapara bombycoides, Morris, Syn. N. A. Lep. Sm. Ins. p. 215. (1862.)

Habitat.—"Canada." (Walker.)

ERINNYIS, Hübner.**104. rimosa.**

Erinnyis rimosa, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 73 (41), pl. 2, fig. 1, ♀. (1865.)

Habitat.—Tropical Insular District!

105. congratulans.

Erinnyis congratulans, Gundlach, MSS. Grote, Ann. N. Y. Lyc. Nat. Hist. (1865.)

Erinnyis congratulans, Grote, Ann. N. Y. Lyc. Nat. Hist. (1865.)

Habitat.—Tropical Insular District!

106. caicus.

Sphinx Caicus, Cramer, Exot. Vol. 2, p. 42, pl. 125, fig. F. (1779.)

Sphinx Caicus, Fabricius, Sp. Ins. Vol. 2, p. 151. (1781.)

Sphinx Caicus, Fabricius, Mant. Ins. Vol. 2, p. 97. (1787.)

Sphinx Caicus, Fabricius, Ent. Syst. Vol. 3, p. 375. (1793.)

Phryxus Caicus, Hübner, Verz. Schm. p. 137. (1816.)

Anceryx Caicus, Walker, C. B. M. Lep. part 8, p. 228. (1856.)

Anceryx Caicus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 177. (1859.)

Anceryx Caicus, Morris, Syn. N. A. Lep. Sm. Ins. p. 203. (1862.)

Erinnyis Caicus, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 72 (40). (1865.)

Habitat.—Tropical Insular District!

107. ello.

Sphinx Ello, Linn., Mus. Lud. Ulric. p. 351. (1764.)

Sphinx Ello, Linn., Syst. Nat. p. 800. (1767.)

Sphinx Ello, Drury, Exot. Vol. 1, p. 58, pl. 27, fig. 3. (1770.)

Sphinx Ello, Fabricius, Syst. Ent. p. 538. (1775.)

Sphinx Ello, Fabricius, Sp. Ins. Vol. 2, p. 143. (1781.)

Sphinx Ello, Cramer, Exot. Vol. 4, p. 24, pl. 301, fig. D. (1782.)

Sphinx Ello, Fabricius, Mant. Ins. Vol. 2, p. 94. (1787.)

Sphinx Ello, Fabricius, Ent. Syst. Vol. 3, p. 362. (1793.)

Erinnyis Ello, Hübner, Verz. Schm. p. 139. (1816.)

Sphinx Ello, Westw. Drury, Vol. 1, p. 54, pl. 27, fig. 3. (1837.)

Sphinx Ello, Harris, Cat. N. A. Sph. Sill. Jour. Vol. 36, p. 297 (17). (1839.)

Anceryx Ello, Walker, C. B. M. Lep. part 8, p. 224. (1856.)

Dilophonota Ello, Burmeister, Sph. Braz. p. 13. (1856.)

Anceryx Ello, Clemens, Syn. N. A. Sph. Jour. A. N. S. Phil. p. 175. (1859.)

Anceryx Ello, Morris, Syn. N. A. Lep. Sm. Ins. p. 200. (1862.)

Anceryx Ello, H.-S. Corr. Blatt. p. 59 (23). (1865.)

Erinnyis Ello, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 73 (41). (1865.)

Habitat.—Atlantic, Tropical Insular and Continental Districts!

108. alope.

Sphinx Alope, Drury, Exot. Vol. 1, p. 58, pl. 27, fig. 1. (1770.)

Sphinx Alope, Cramer, Exot. Vol. 4, p. 23, pl. 301, fig. G. (1782.)

Sphinx Alope, Fabricius, Mant. Ins. Vol. 2, p. 94. (1787.)

Sphinx Alope, Fabricius, Ent. Syst. Vol. 3, p. 362. (1793.)

Erinnyis Alope, Hübner, Verz. Schm. p. 139. (1816.)

Sphinx Alope, Westw. Drury, Vol. 1, p. 52, pl. 27, fig. 1. (1837.)

Anceryx Alope, Walker, C. B. M. Lep. part 8, p. 224. (1856.)

Dilophonota Alope, Burmeister, Sph. Braz. p. 13. (1856.)

Anceryx Alope, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 177. (1859.)

Anceryx Alope, Morris, Syn. N. A. Lep. Sm. Ins. p. 202. (1862.)

Anceryx Alope, H.-S., Corr. Blatt. p. 60 (24). (1865.)

Erinnyis Alope, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 75 (43). (1865.)

Habitat.—Tropical Insular District!

109. *merianæ*.

Erinnyis Merianæ, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 75 (43), pl. 2, fig. 2. (1865.)

Habitat.—Tropical Insular and Continental Districts!

110. *œnotrus*.

Sphinx œnotrus, Cramer, Exot. Vol. 4, p. 22, pl. 201, fig. C. (1782.)

Erinnyis œnotrus, Hübner, Verz. Schm. p. 139. (1816.)

Anceryx œnotrus, Walker, C. B. M. Lep. part 8, p. 227. (1856.)

Dilophonota œnotrus, Burmeister, Sph. Braz. p. 14. (1856.)

Anceryx œnotrus, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 177. (1859.)

Anceryx œnotrus, Morris, Syn. N. A. Lep. Sm. Ins. p. 202. (1862.)

Erinnyis œnotrus, Grote, Notes Cub. Sph. Proc. E. S. Phil. p. 76 (44), pl. 2, fig. 3. (1865.)

Habitat.—Tropical Insular District!

111. *melancholica*.

Erinnyis melancholica, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 77 (45), pl. 2, fig. 4, (♂ nec ♀.) (1865.)

Habitat.—Tropical Insular District!

112. *cinerosa*.

Erinnyis cinerosa, Grote, Ann. N. Y. Lyc. Nat. Hist. (1865.)

Habitat.—Tropical Insular District!

113. *pallida*.

Erinnyis pallida, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 78 (46), pl. 1, fig. 6. (1865.)

Habitat.—Tropical Insular District!

114. *obscura*.

Sphinx obscura, Fabricius, Syst. Ent. Flens. et. Lips. p. 538. (1775.)

Sphinx obscura, Fabricius, Sp. Ins. Vol. 2, p. 142. (1781.)

Sphinx obscura, Fabricius, Mant. Ins. Vol. 2, p. 94. (1787.)

Sphinx obscura, Fabricius, Ent. Syst. Vol. 3, p. 361. (1793.)

Erinnyis Stheno, Hübner, Samm. Exot. Schm. Vol. 2, Lep. 2, Sph. 3, Leg. 4, Mand. A, Lev. 2. (1806—1824.)

Anceryx obscura, Walker, C. B. M. Lep. part 8, p. 226. (1856.)

Anceryx obscura, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 176. (1859.)

Anceryx obscura, Morris, Syn. N. A. Lep. Sm. Ins. p. 201. (1862.)

Erinnyis obscura, Grote, Notes Cub. Sp. Pr. E. S. Phil. Vol. 5, p. 78 (46). (1865.)

Habitat.—"West Indies," (Fabricius); "Mexico," (Walker); "Texas," (Clemens).

115. *guttularis*.

Anceryx guttularis, Walker, C. B. M. Lep. part 8, p. 227. (1856.)

Anceryx guttularis, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 177. (1859.)

Anceryx guttularis, Morris, Syn. N. A. Lep. Sm. Ins. p. 202. (1862.)

Anceryx guttularis, H.-S., Corr. Blatt. p. 60 (24). (1865.)

Erinnyis guttularis, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 79 (47). (1865.)

Habitat.—Tropical Insular District!

CAUTETHIA, Grote.116. *noctuiformis*.

Enosanda noctuiformis, Walker, C. B. M. Lep. part 8, p. 232. (1856.)

Enosanda noctuiformis, Clem., Syn. N. A. Sp. Jour. A. N. S. Phil. p. 187. (1859.)

Enosanda noctuiformis, Morris, Syn. N. A. Lep. Sm. Ins. p. 214. (1862.)

Enosanda noctuiformis, Grote, Notes Cub. Sph. Proc. E. S. Phil. Vol. 5, p. 79 (47). (1865.)

Cautethia noctuiformis, Grote, Ann. Lyc. Nat. Hist. N. Y. (1855.)

Habitat.—Tropical Insular District!

ARCTONOTUS, Boisduval.117. *lucidus*.*Arctonotus lucidus*, Boisduval, Ann. Soc. Ent. Fr. 2ième. Ser. t. 10, p. 319. (1852.)*Arctonotus lucidus*, Walker, C. B. M. part 8, p. 265. (1856.)*Arctonotus lucidus*, Clem., Syn. N. A. Sph. Jour. A. N. S. Phil. p. 188 (1859.)*Arctonotus lucidus*, Morris, Syn. N. A. Lep. Sm. Ins. p. 217. (1862.)*Habitat*.—"California." (Boisduval.)

NOTES AND DESCRIPTIONS.

In a "Synopsis of North American Sphingidæ,"* Dr. Brackenridge Clemens has elaborately defined the structural features which limit the Family and Mr. Grote, in his "Notes on Cuban Sphingidæ,"† has regarded it in the sense in which it is here intended.

The genus *Sphinx* of Linnæus, which comprised series of species united by the most general and superficial character, has been resolved into Families by Latreille and other Naturalists, a course which has received the sanction of continued affirmation, the result of determinate studies of the present Order of Insecta.

The tendency in the Lepidoptera, by an ultimate variability of form—which latter is an essential feature in family character—to afford so-called connecting links, which are in reality but Analogous Types, has induced Naturalists often to erect incoherent groups, embracing distinct Families, or to adopt Family names for small groups of genera, held together by peculiar and therefore varying and unequal affinities, thus affording no scope for a conception of the Natural Plan of the Order. Latreille, in his "Considerations Générales,"‡ when arranging his Family "Sphingidæ," inaugurates it with *Castnia*, which latter genus later study has removed to the Zygænidæ,|| but leaves it improved by the elimination of the *Ægeriidæ* (Sesiidæ), a course which seems so proper as to create surprise, that the latter Family should have been again associated with the Sphingidæ, by subsequent Naturalists.

Zoölogists are agreed, that the distribution of species over the surface of the earth is unequal, and, that areas of unequal value can be defined within any one Continent or Ocean, that shall contain peculiar species, which separate them into distinct Faunæ.§ The widest geographical

*Art. V, Journal Academy Natural Sciences, Phil., pp. 97—190. (1859.)

†Proceedings Entomological Society, Phil., Vol. V, pp. 33—84. (1865.)

‡Considerations Générales sur l'ordre naturel des Animaux composant les Classes des Crustacés, des Arachnides, et des Insectes; avec un Tableau Méthodique de leurs Genres, disposés en Familles, Par P. A. Latreille. Paris, 1810.

||Packard, Notes on the Family Zygænidæ, Proc. Essex Institute. (1864.)

§Agassiz, Ess. on Classification, pp. 42—52, Lond. Ed., (1859); and Methods of Study in Nat. Hist., pp. 99, 100, Bost. Ed. (1863.)

extent of these Faunæ, limited by physical conditions, exhibits the distribution of the most extensive types, within which, lesser areas are defined, by the range of more limited and characteristic forms. Were our knowledge sufficiently ample and methodized, it is evident that we should discard political designations in giving the habitat of species, and, in contributing to the knowledge of any one Zoölogical Order or Family, we should seek to fix its specific distribution with a reference to these different areas, aided by the delineation of Faunal Maps.

In an admirable contribution to Entomological knowledge, "The Coleoptera of Kansas and Eastern New Mexico," by Dr. John L. LeConte, published by the Smithsonian Institution in 1859, such a Faunal Map is prepared, illustrating the Entomological Provinces of North America. Dr. LeConte divides the whole region of the United States into three or four "great Zoölogical districts, distinguished each by numerous peculiar genera and species" of Coleopterous Insects. We refer to this work for the elucidation of this division, and content ourselves here with merely enumerating the different districts, adopting the designations which Dr. LeConte has proposed, and remarking, that, so far as we are aware, the species of Lepidopterous Insects are distributed, generally speaking, over wider geographical areas than Coleopterous Insects, perhaps owing to the greater development of the organs of flight, at the expense, somewhat, of those of terrestrial progression.

The Atlantic District extends "from the Atlantic Ocean to the arid prairies on the west of Iowa, Missouri and Arkansas."

The Central District extends "from the western limit of the eastern (atlantic) district, perhaps to the base of the Sierra Nevada of California, including Kansas, Nebraska, Utah, New Mexico, Arizona and Texas. Except Arizona, the Entomological fauna of the portion of this district west of the Rocky Mountains, and, in fact, that of the mountain region proper, is entirely unknown; and it is very probable that the region does, in reality, constitute two districts bounded by the Rocky Mountains and southern continuation thereof."

The Western District "is the maritime slope of the Continent to the Pacific, and thus includes California, Oregon and Washington Territories."

We indicate in addition a Tropical Insular District, embracing the West India Islands, and which comprehends, in all probability, the southern extremity of the Floridian Peninsula and the Florida Keys. Also a second district, comprehending Mexico, Honduras, Belize and Yucatan, including, as indicated by Dr. LeConte, a narrow strip near

the seacoast of Texas in its northeastern Province. This may be called the Tropical Continental District.

The synonymy adopted in the present paper is the result of personal investigation, almost without exception, of all the works cited. Where this has not been possible, the citation is included in quotation marks. Where the species is autoptically known to us, or, in a few instances, from very reliable information, the habitat is followed with a note of exclamation.

We have found Mr. Walker's notice of this Family the most useful and thorough, though we have occasion to differ in certain instances from the conclusions of that indefatigable Entomologist. Dr. Clemens' "Synopsis" has also afforded us acceptable information as to the text; the synonymy is, however, a literal and verbatim transcription from the British Museum Lists in by far the greater majority of cases. Where an improvement has been attempted, as in uniting *Philampelus lycaon* and *P. satellitia*, it seems to have been usually at the expense of correctness.

Lepisesia flavofasciata.

Mr. Walker describes this species for the first time, in the British Museum Lists, quoting Dr. Barnston's MSS. as authority for the generic and specific names adopted. Dr. Clemens has omitted this reference to Dr. Barnston, giving Mr. Walker as the authority for the specific name, while copying the description from the British Museum Lists, being autoptically unacquainted with the species. Mr. Grote, in his introduction to his "Notes on Cuban Sphingidæ," erects the present genus for it, comparing its structure with the typical European species of *Sesia*. We consider its present position at the head of the Tribe, authorized by the peculiarities of its structure, and are unwilling to interrupt the continuity of the following genera by the interpolation of this genus, which is so intimately allied to *Sesia*. The peculiarly neat and elegant little species of which this genus is composed, has not been very clearly described by Mr. Walker, and we give here its more detailed description as follows: Black. Above, the thorax and head are clothed with pale yellowish-sericeous, erect hair, mingled with blackish scales. Laterally, the palpi and the orbits of the eyes are deep black. Abdomen black, with sericeous hairs above on the basal segment. Anal tuft black, with lateral sericeous sub-tufts. The anterior wings are blackish with obsolete ornamentation; a rather broad, semi-diaphanous, sub-terminal band, composed of sparse and whitish scales, extends evenly and obliquely from costa to internal margin; the terminal por-

tion of the wing is less thickly covered with scales, acquiring a paler tinge than the basal portion. Posterior wings black, with a broad, central, bright fulvous fascia, which contracts, triangularly, towards internal margin, before anal angle becoming somewhat linear and sinuate. Beneath, the anterior wings at base are largely covered with bright fulvous squamation; the central fascia on posterior wings is whitish. Legs and under thoracic and abdominal regions, black. Exp. ♂ 1.60 inch. Length of body .80 inch.

The color and peculiar *Sesia*-like sericeous squamation of this pretty species, are very suggestive of the hymenopterous genus *Bombus*, notwithstanding the opacity of the wings.

SESIA, Fab. emend. nob.

The generic term *Sesia* Fab. is used in a comprehensive and vague sense at first by its discoverer, as an improvement upon Linneæus' genus *Sphinx*. In the *Entomologica Systematica*, p. 379, 1793, it is thus defined: "*Palpi duo reflexi. Lingua exserta, truncata. Antennæ cylindricæ.*" Fabricius there includes under it *first*, certain species of Sphingidæ which are comprised in the present Tribe *Macroglossini*; *then* the species of the Family *Ægeriidæ* (*Sesiidæ*). Through the observations of different Entomologists the term has at length been restricted by Mr. Walker, in 1856, to the species with more or less vitreous wings; that Entomologist using it in a synonymical sense to the genus *Cephonodes* Hübner, a genus of which *Sesia Hylas* Fab. is the type, and to which latter species, from autoptical examination, we are satisfied it may with propriety be confined. In studying the American species grouped under *Sesia* by Mr. Walker, we have become satisfied that distinct genera have to be eliminated, and that the European *S. fuciformis* and *S. bombyliiformis*, and the American *S. diffinis*, offer distinctive features from *S. thysbe* Fab. and allies, and that to the former the generic term proposed by Fabricius should be restricted. As thus understood, the genus *Sesia* offers the following structural characters: The head is globose, free from the thorax; the palpi, which are loosely haired, extend as far, but not beyond the steep clypeus. The antennæ are somewhat suddenly swelled towards their outward extremity, and are much constricted at base. The prothoracic parts are square in front, but moderately advanced before the insertion of the primaries. The wings are small; anterior pair slightly depressed at the apices, rounded along external margin, which is not very oblique. The abdomen is wider than the thorax, stout and plump, ending rather squarely, terminal segments not sloping down to the apex. The plump

corporal parts are covered with long, downy, erect squamation, which is generally of a yellowish-sericeous color, with a greenish shade above on the thoracic parts. The prebasal abdominal segments are clothed with black, rigid hair; the anal segments show a slight fulvous shade on the thick sericeous squamation above. The wings are largely vitreous, with narrow borders. The under surface shares the characteristic, downy squamation. The legs are finely scaled, slender, with two nearly equal spurs at the base of the middle tibiæ. The species form two groups. The first comprises *S. fuciformis* and *S. diffinis*, in which the borders of the wings are very narrow and the discal cell is free and naked. The second comprises *S. bombyliiformis*, in which the wider borders are dark dull reddish-brown; the discal cell traversed longitudinally by an almost imperceptible linear thickening of the tegument, covered by distinct scales, which latter appear as if covering a longitudinal vein.

HÆMORRHAGIA, nov. gen.

When we compare *Sesia thysbe* Fab., and allied species with the species of *Sesia*, as above restricted, we meet but the character of the vitreous wings, though that itself somewhat modified, to authorize their congenerical association. The head, in *S. thysbe* Fab. and allies, is much flattened above; the closely scaled palpi extending beyond the sloping clypeus. Antennæ long and stout, gradually narrowing to base. The epicranium is broad behind. The prothoracic parts are well produced before the insertion of the primaries, and slope in front toward the caputal base. The wings are large and acuminate; in the typical species the apex is much produced, the external margin very oblique and quite uneven, not rounded. The hind wings are large and broad, being well developed posteriorly. The abdomen is long and rather stout, anal segments slightly and gradually contracting. The squamation is very distinctive and *sui generis*. The corporal parts are clothed with even, rather sparse, appressed hairs, which lie closely to the surface. The coloration is rich claret brown; the head, thoracic parts and basal abdominal segments, above, are of different shades of green. The wings are broadly margined and are more or less intensely reddish-brown; the tegument at internal margin and anal angle of posterior wings is much exaggerated and thickly covered with scales. The under surface of the body is covered with short appressed squamation, whitish on the under surface of palpi, thoracic region and legs, the latter with two very unequal spurs at the base of middle tibiæ. The species are evidently allied to *Aellopos* Hübner. and form an intermediate position

preparing us for that genus. The discal cell is retreating, nervules longer than in *Sesia*. Like *Sesia*, this parallel genus affords two Groups. The first contains *H. gracilis*, nob. which approaches the opposed Group of *Sesia*, in appearance. In this species the discal cell is free and uncrossed by any longitudinal fold or scales. The head approaches *Sesia* in structure, while the characters in their entirety induce us to refer it as a Group of the present genus, with which its squamation agrees. The second Group contains *S. thysbe* Fab., *S. fuscicaudis* Walk. and probably *S. ruficaudis* Kirby, non Walker, and is the more typical Group of the genus and upon which the above diagnosis is generally based. The palpi exceed the clypeus greatly and are converging at the tips. The discal vein is longitudinally crossed by a line of scales, though a thickening of the discal membrane beneath is not appreciable.

Hæmorrhagia gracilis, nov. sp. (Pl. 3, figs. 1 & 2 ♀.)

Form somewhat small and slight. Head and thorax above, clothed with olive green appressed hair; basal segments similarly colored. Palpi, black at the tips, whitish beneath. Orbits of the eyes white, in front of these, a few whitish scales. Laterally the under thoracic parts are clothed with long white hair, extending from behind the eyes to base of secondaries. Wings, vitreous; anterior pair largely dark red at base, the scales encroaching on the discal cell from the base. Discal cell free. External margin with a moderately broad, dark red, even, band, which is brighter stained apically, narrowing to internal angle. Internal margin clothed with dark red scales. Posterior wings dark red, paler on internal margin and above anal angle. Centrally, these are vitreous, the diaphanous space crossed by *five* nervules. Abdomen, except basal segments, dark red; third basal segment fringed anteriorly with pale hairs; fourth, dorsally with a few similar colored appressed hairs; fifth and sixth with a few pale lateral hairs. Anal tuft black laterally, centrally pale red. Under surface pale red; abdomen pale red, with a central subobsolete series of pale spots composed of a few agglomerated hairs. Laterally, spots of similarly colored hair at the base of the segments; posteriorly the segments show a narrow edging of black hairs. The sides of the abdomen show sub-tufts fringed above with pale yellowish, similarly colored hair, so that forming the lateral and central series of abdominal spots. Anal tuft concolorous with abdomen beneath; extremities of anal hairs, black. Anterior femora clothed with thick white hair; similar hair also covers the under thoracic part centrally. Anterior tibiæ pale red, as are also the

middle and posterior legs, both femora and tibiæ. Maxillæ well developed. Posterior wings beneath, with a pale yellowish patch at anal angle. Exp. ♂, 1.75 inch. Length of body .85 inch.

Habitat.—Canada West (Saunders). “New York State” (Walker).

The marginal band on the anterior wings is not dentate between the veins as in *S. thysbe* Fab., from which the present is amply distinct by its smaller size, differently colored legs and free discal cell, while we have above discussed its structural position as forming a Group in the present genus.

This species is evidently the *S. ruficaudis* of Mr. Walker, judging by the description in the British Museum Lists. It can in no event be regarded as a variety of *S. thysbe*, while we call the attention of Lepidopterists to the formation of the inner margin of the outer band on the anterior wings as affording specific character, in separating the species of this genus. In *H. thysbe* it is very dentate inwardly on the interspaces.

Hæmorrhagia ruficaudis, Kirby, sp. non alior.

The description of this species given by Kirby, reads as follows:—“Body yellow-olive, underneath pale yellow. Antennæ black; primaries reddish-brown, hyaline in the disk, with the hyaline part half divided towards the base, with a costal bar, covered with yellow olive hairs at the base; underneath the costa, the posterior margin and the nervures are dark ferruginous; there is also a yellow stripe on the inner side of the base; secondaries hyaline in the disk; base externally and costa yellow; internally the base is ferruginous; underneath the dark part of the wing is ferruginous, and the base pale-yellow: two first segments of the body yellow-olive, two next black, the rest ferruginous with pale yellow lateral spots. This species appears to be the American representative of *Sesia fuciformis* which it greatly resembles, but differs in the color of the tail and the base of the secondaries.”

Were we satisfied as to the species Kirby intended by *S. fuciformis*, the present species might be regarded as related to *S. diffinis* Boisd. sp. As it is, we think that a species of *Hæmorrhagia* is meant, while the species has not been since identified. Kirby's description presents too many points of difference with *H. gracilis*, to allow us to refer that species as intended, while Mr. Walker evidently describes our species as intended by Kirby. Dr. Clemens is autoptically acquainted with neither species while, properly keeping Mr. Walker's and Kirby's descriptions apart. In dismissing the present genus from consideration, we remark that the Asiatic *S. radians* Walk., may belong

to *Hæmorrhagia*; *S. Hylas* Fab., as we have already remarked, and probably also *S. Cunninghami* Boisd. sp., should be referred to *Cephonodes* Hübner.

A mutilated specimen from the most northern parts of Canada West is before us, which evidently forms a distinct species from *H. thysbe*. In this species, which is altogether slenderer than its congener, the inner margin of the terminal band on anterior wings is nowhere denticulate in the interspaces, but is medially, somewhat inwardly, produced. We are not indisposed to regard this as Kirby's species, but the inferior condition of the specimen prevents all conclusions. The discal cell is crossed by a longitudinal scale line, the species belonging to the more typical group of the Genus *Hæmorrhagia*.

***Aellopos tantalus*.**

Since Mr. Walker and Dr. Clemens have confounded the present species and *Aellopos titan* together, we do not cite these Authors in the synonymy of either species. We do not find that Authors, since Linnæus and Fabricius wrote, have identified *Sphinx Ixion* Linn., a name to which Mr. Walker refers as a synonym to *Macroglossa Tantalus* Walk. Linnæus' descriptive phrase reads as follows, while the absence of any reference to the superior abdominal white band prevents our considering the probability of Cramer's *S. titan* being intended: "Ixion. 26. S. abdomine barbato: lateribus punctis utrinque 4 niveis. M. L. U. Habitat in calidis regionibus." Syst. Nat. p. 803. Fabricius in his "Entomologia Systematica" refers *S. Ixion* as a synonym to *S. tantalus*, citing Cramer's figure, Plate 68, fig. F, and doubtless without autoptical knowledge of the species which now appears to be lost.

***Amphion nessus*.**

Hübner, in erecting this genus in his "Verzeichniss," associates with it, apparently erroneously, Cramer's *S. Brennus*, Plate 398 (396), fig. B (D), referred to the genus *Chærocampa* by Mr. Walker. The American species is evidently regarded as the more typical of the genus by Hübner, who enumerates it first. *A. nessus* is generically distinct from *Thyreus abbotii*, and it seems proper to retain Hübner's generic name for the species.

***Hemeroplanes pseudothyreus*.**

This species resembles *S. oichus* Cramer, from Surinam, in the disposition of the prothoracic markings; otherwise it is very distinct from both Cramer's figure and description. The latter reads as follows:—"Ce Sphinx a sur le beau dessein de chaque aile supérieure, trois petites taches d'un lustre argente, dont l'une est placée vers les jointures,

et les deux autres sur le milieu, vers le bord extérieur. En-dessous le corps est d'un rouge brun clair. Sur l'abdomen quatre points blancs. Les ailes inférieures vers le corps sont blanches; le reste avec les ailes supérieures sont bandes transversales dentelées brunâtres. La trompe est longue."

***Perigonia restituta*.**

To the kindness of Mr. J. W. Weidemeyer we are indebted for information about this MSS. species, of which Mr. S. Calverley has shown us a figure made under the superintendence of Mr. Walker. It is an elongate species with rather narrow wings, and belongs to the typical group of the genus which contains *P. lusca*, *P. stulta*, and *P. lefebvrii*. The posterior wings are much produced at anal angle, which is shaded with yellow scales. The median yellow demi-band, which is characteristic of the genus, extends from the costa, where it is broadest, to about the centre of the wing, where it terminates with a rounded inward inflection. It is from Mexico. *P. subhamata* and *P. glaucescens*, present structural differences compared with the species cited above, and which are more typical of the genus; the figures which we have seen of these latter two of Mr. Walker's species, suggest that these might be separated generically from *Perigonia*.

***Proserpinus gauræ*.**

It is very probable that the species described by Dr. Clemens under this name from Texas, is not the same as the one intended by Abbot & Smith, since the Texan species is stated by Dr. Clemens to disagree with Abbot's figure in the conformation of the external margin of anterior wings, and, from the description, it would seem to differ also slightly in coloration.

EUPROSERPINUS, nov. gen.

Wings entire: anterior pair large, rounded superiorly along external margin, much excavated before the exerted internal angle; internal margin straight. Secondaries reduced, subtriangulate, hardly excavate before anal angle; external margin slightly rounded. Antennæ, stout, flexuous and long. Head, rather small; prothoracic parts but slightly advanced before the insertion of the primaries. Abdomen, slender, well exceeding the secondaries, furnished with regular series of long hair-tufts on the terminal segments above, and laterally the anal segment with a spreading terminal tuft.

We erect this genus for a small California species of the present Family, which, while allied to *Proserpinus*, differs by the small, reduced secondaries, longer antennæ and tufted abdomen. We are indebted to

Mr. J. W. Weidemeyer for the information respecting this singular little species, which, we believe, has not been hitherto described, while an excellent figure, shown us by Mr. S. Calverley, enables us to present the present description and to fix the species. It appears that Dr. Boisduval has etiquetted a specimen in his cabinet as *Proserpinus Phaeton*.

Euproserpinus Phaeton.

Size small; anterior wings of a bluish shade, costa at base tinged with testaceous. A blackish, regularly lunulate transverse line, angulated below costa, runs inwardly obliquely from costa to internal margin at basal third. Between this line and the base of the wing are two blackish parallel marks below costa. A few blackish scales on the discal cross-vein. Median space even in width from internal margin until above the angulation of the first transverse line, when it widens to costa. Subterminal space pale brownish-testaceous, defined inwardly by a distinct blackish transverse line, and similar to the front, excavate between the nervules and slightly arcuate before costa. An interior narrow line, furcate below costa; subterminal space margined outwardly by a very distinct, blackish, shade band which is slightly sinuate and not excavate. Terminal space dull bluish, concolorous with median. Posterior wings whitish, shaded with brownish-testaceous at base, and with an even, distinct, broad, black subterminal band, which leaves a very narrow whitish terminal border and does not attain anal angle.

Tegulae, lined within with darker lines; corporale parts darker but concolorous with primaries; above, the abdomen shows some darker shades; anterior tufts, of which the first extends across the abdomen above, paler; those on anal and pre-anal segments, blackish. Exp. 1.50 inch. Length of body .65 inch.

CHEROCAMPA.

The species arranged under this genus may be resolved into three groups. The first contains *C. gundluchii* H-S. and *C. irrorata* Grote, in which species the anterior wings are not at all falcate; the external margin is rounded and the ornamentation is modified, since a straight, narrow, subterminal, darker shade line is drawn across the wings. The second group contains apparently *C. nechus*, *C. thalassina*, *C. porcus* and *C. nitidula*. These are rather stout, heavy species, having the external margin sinuate; the coloration is green and brown, with diffuse spots and bands. The third group contains apparently *C. procne*, *C. versuta*, *C. tersa*, *C. robinsonii* and *C. falco*. These are slender

species, having the anterior wings more or less falcate, and crossed by fine, striate, pale lines, which are quite characteristic. This latter group is well represented in Asia and Africa, to judge from authors, where the species sometimes acquire argent metallic lines and tinges. As to *C. drancus* Cramer, sp., quoted by Mr. Walker as occurring in the West Indies, Cramer gives the habitat plainly as "Indes Orientales," Cram. Exot. Vol. 2, p. 56. This habitat is erroneously translated by Mr. Walker, who has not identified the species. Dr. Clemens copies Mr. Walker's erroneous habitat, evidently without having referred to Cramer's work. The different genera in this Tribe are remarkable in having green and brown species, while Mr. Grote has remarked that certain larva belonging to this same Tribe show indifferently these two "cosmical tints" at maturity. In the genus *Otus*, *O. chærilus* is brown, the rest more or less green. In *Chærocampa*, *C. irrorata* Grote, and generally speaking the species of the third group, are brown or brownish. In *Philampelus*, *P. achemon* and *P. typhon* assume a brownish hue, etc.

***Deilephila intermedia*, Kirby.**

This species, which is not yet identified, may be the same as *D. chamænerii* Harris, but for the present it is best to keep it distinct, since Kirby's insufficient diagnosis could hardly entitle it to take precedence of Dr. Harris' species, though anterior in point of publication. The description in the Fauna Am. Bor. reads as follows: "This species is intermediate between *D. Euphorbia* and *D. gali*, which last it most resembles, but the anterior portion of the mesal stripe of the primary wings is pale rose color; the fringes of their inner margin, and of the posterior of the secondaries is white; there is no series of white dots on the back of the abdomen, and the ventral segments are fringed at the apex with white hairs. This description was taken from an old specimen, apparently somewhat faded."

***Deilephila lineata*.**

Fabricius, in his late works, himself regarded our species as identical with the European *D. livornica*. We refer to Mr. Grote's recent paper for remarks on the synonymy of this species, as well as on *D. chamænerii* Harris.

***Philampelus vitis* and *Philampelus* Linnei.**

Linnaeus is the first to describe a species of *Sphinx* under the specific name of *vitis*. His diagnosis reads as follows: "S. alis cineris fusco variis: posticis margine interiore sanguineis." He refers to M. Merian's figure, T. 47, fig. 1, Ins. Surin., and adds: "Alæ inferiores

macula nigra in disco, et fascia nigra postice." The Plate of M. Merian's referred to, represents two distinct species. The lower figure on the Plate seems to us to represent *Philampelus lycæon* Grote. The upper, and the one probably intended by Linnæus, while neither figure is numbered, represents the species which we intend here as *P. vitis*. The figure is gross, and in the uncolored copies might be readily mistaken for a second species which we describe here as *Philampelus Linnei*, which has been figured by Cramer on Plate 268, figure E, a figure which has been confounded with that on Plate 267, fig. C, by Mr. Walker and Dr. Clemens. M. Merian evidently mistook the two species which she figures, for sexes of one and the same species. We quote: "een schoner Uil voortquam, gruen en rood met ligte leverwige streepsen, haar smuit en hornjes waren gout geel, die Mannetjes waren schoonder als die Wyftjes." The upper figure has the pink terminal band, which is characteristic of *Philampelus vitis*, nob, and this feature is decisive as to the species intended. Drury, in 1770, is the first Entomologist after Linnæus to figure and describe Linnæus' *Sphinx vitis*. His figure, which is very satisfactory, represents the slighter species with the terminal pink band, and this figure is mistakenly quoted with Cramer's Plate 267, fig. C, and Abbot & Smith's Plate 40, by Mr. Walker and Dr. Clemens, in the synonymy of the species figured by Cramer on Plate 268, fig. E, and which these authors determine as *Sphinx vitis* Linn. In 1776 the authors of the Wiener Verzeichniss figure *Sphinx vitis* Linn. on the two colored Frontispieces to their work. The figures agree with Drury's. In the same year Sulzer figures the same species as *Sphinx fuscatus* Sulzer, a name which is therefore a simple synonym of *Sphinx vitis* Linn., while, without having seen the work, Mr. Grote has hastily supposed that Sulzer's figure represented the second species, misled by the incorrect synonymy of Mr. Walker and Dr. Clemens. Cramer next, in 1782, figures the *S. vitis* of Linnæus correctly on Plate 267, while mistakenly figuring on Plate 268, and for the first and only time, the second species—*Philampelus Linnei*, nob—as the female of *S. vitis*. Cramer criticizes, on another page of his work, the course of Sulzer in re-describing Linnæus' *S. vitis* under the new name of *S. fasciatus*. In 1797, Abbot & Smith figure *Sphinx vitis*. Their excellent figure represents the same species given by Drury, the W. V. and Cramer (Plate 267). Both Mr. Walker and Dr. Clemens quote the figure of Abbot & Smith's in the synonymy of their *P. vitis*, which, as already stated, is not that of Merian, Linn., Drury, "W. V.," nor of Abbot & Smith. Dr. Clemens adds to the

confusion by describing the larva from Abbot & Smith, which of necessity belongs to the figured imago, as that of *P. vitis* Clem., while this larva in reality belongs to the species described as *Philampelus jussieuæ* Clemens. In 1806—1824 Hübner twice figures *Sphinx vitis* under the specific name of *Jussieuæ*, a name drawn apparently from the food plant represented by Abbot. Hübner's figures are, as usual, excellent, but not better than Drury's and Abbot & Smith's representations of this species. This name of Hübner's must therefore be added to the synonymy of *Sphinx vitis* Linn., as stated by Mr. Grote. In 1839 Dr. Harris describes the *Sphinx vitis* nob, erecting for it and allied species, the genus *Philampelus*. It is very evident that Dr. Harris' description belongs here, though again misquoted by Mr. Walker and Dr. Clemens. Dr. Harris describes a species under the specific name of *Hornbeckiana*, from specimens received from St. Thomas, W. I., which is perhaps the species described by us as *P. Linnei*, while we note the disparities which prevent our acceptance of Dr. Harris' specific name for our species. In 1856 Mr. Walker retains the name of *P. jussieuæ* for the species figured by Merian, Drury, "W. V.," Cramer (Plate 267), Abbot & Smith, and described by Linnæus as *Sphinx vitis*, and by Dr. Harris in 1839 as *Philampelus vitis*. Under "*P. vitis*" Mr. Walker describes the species figured by Cramer on Plate 268, and which we describe as *Philampelus Linnei*, since it appears that it is undescribed until now, having been uniformly mistaken, for some reason or other, for the *Sphinx vitis* of Linnæus and the earlier authors. In 1859 Dr. Clemens adopts Mr. Walker's synonymy, while describing the larva of *Sphinx vitis* Abbot & Smith, under the species which is evidently *Philampelus Linnei* nob., as already stated, in addition remarking, that "this species (i. e. *P. jussieuæ*, Clem. = *S. vitis* Linn. = *Philampelus vitis* Harris) approaches *S. vitis* (i. e. *Sphinx vitis* Cram., Plate 268 non alior = *Philampelus Linnei* nobis) so nearly in ornamentation that I am disposed to regard it as a variety," a view which Mr. Grote has already contradicted, and which we regard as quite erroneous in any sense.

***Philampelus vitis*, Harris.**

Sphinx vitis, Linnæus.

Wings narrower and more acute. Anterior wings with the external margin straight, not rounded. An inwardly slightly arcuated, even, oblique, fuscous fascia runs from the costa before the apex to about the centre of the inner margin, joining, beyond the disc, at the middle of the wing a similar broad, longitudinal fascia, which emanates from the

base of the wing. Ground color of the wing dusky olivaceous; costa and terminal space obscure brownish. Nervules indefinitely marked with fuscous scales. The oblique fascia sends off a branch before costa to the apex, and outwardly, before internal margin, is divided narrowly by olivaceous scales which cause an outward parallel line to appear. A discal spot, enclosed by fuscous scales above the central fascia. A narrow, transverse, fuscous line intersects the olivaceous space on internal margin, running straightly from the central parallel fascia to internal margin and forming the inner defining line of the V-shaped patch on internal margin which is characteristic of the genus.

Posterior wings dull pale greenish inwardly. Along the external margin, from costal angle to medio-posterior nervule, is a broad terminal pink band, within which a broad black fascia, interrupted by greenish scales on the nervules, and terminating below medio-posterior nervule, in two narrow lines, outside of which latter is a brownish square space above anal angle. Internal margin and anal angle, largely pink; two large black spots below the disc, merely separated by a few pink scales; a few white scales within the terminal black lines above anal angle.

Philampelus Linnel, nob. (Plate 3, fig. 3, ♀.)

Sphinx Vitis, Cramer, Plate 268, fig. E.

Wings broader and more rounded. Anterior wings with the external margin undulate and rounded. An irregular broad fuscous fascia, lined inwardly with whitish scales, runs from costa, before apex, to internal margin, enclosing an irregular, coincident, darker, outward line of scales, and sending off a more yellowish broad branch, before costa, to apex. First, second and third inferior median nervules marked with fuscous and whitish scales. A broad, darker, parallel, fuscous fascia runs from the base of the wing to the first, which it nearly attains beyond the disc, but is separated by a few olivaceous scales. Ground color of the wing, dark intense olivaceous. Costa and terminal space, obscure brownish. Two olivaceous discal dots, enclosed by fuscous scales above the central fascia. A geminate, fuscous, irregular, transverse band runs from costa to internal margin, angulate above the central fascia, and forming, on internal margin, the inner defining limit to the olivaceous V-shaped patch which is characteristic of the genus.

Posterior wings light green; a large rose-colored space on anal angle and along internal margin; a large rectangular black spot within; two narrow median lines, the inner—black, most distinct, and joining the large black spot at the outer inferior angle, the outer—faint, glaucous,

contiguous to subterminal band, bent before anal angle; a broad, subterminal black band, widest at costa, narrowing to anal angle, before which it is suddenly constricted; terminal space narrow, nowhere pinkish, obscure brownish; external margin more rounded than in *P. vitis*.

As regards *Philampelus Hornbeckiana*, we are indebted to Dr. Packard and Mr. Sanborn for the information that a thorough search into Dr. Harris' collection, kindly undertaken at our request, has failed to detect any specimen resembling Dr. Harris' description of this species, or so labelled. While Dr. Harris' description would seem to imply that *P. Linnei* nob. is intended, the description of the anterior wings does not correspond, while that of the posterior wings must be incomplete, if it is to be taken literally. The description of the corporal parts quite nearly correspond with our specimens of *P. Linnei*, but these have great coincidence in the present genus. Warned by the discovery of *P. strenuus*, that there probably exist more species belonging to this genus than at present known, we conclude that perhaps Dr. Harris' species may be re-discovered at some future day, while this has been an incentive to us to endeavor to fix the limits of *P. vitis* since that species has been so often mistaken by authors, as will be seen by the digest of our synonymy, that we know of no case in this Family where the opinions are so conflicting and the matter of references so intricate. We trust that we have shed some light on a subject, which, adopting the synonymy of Mr. Walker and Dr. Clemens, is simply incomprehensible, and could hardly lead any Entomologist into ought but error. All the descriptions and figures we quote in the synonymy of these species have been critically examined, and, since in this case the acknowledged insufficiency of the earlier Latin diagnosis is strengthened by a figure, which, however gross, bears a distinctive coloring which appears to us to afford a strong specific character, we can come to no other conclusions than those we have here presented, independent of the concurrent testimony of so many of the earlier authorities on American Lepidoptera.

***Philampelus lycaon.* (Plate 3, fig. 4, ♀.)**

We refer to Mr. Grote's paper for remarks on this species as well as on *P. satellitia*. Although Cramer's figure of *S. lycaon* wants the anal roseate patch, still this is vaguely indicated in the description, which is short, and reads as follows: "Ce Sphinx Entier très rare (Sphinx Legitima) est en-dessous de couleur minime et vers les pointes des ailes inférieures de couleur rousse." There is, perhaps, a third species

to be eliminated, judging from what Mr. Walker remarks, and, in case this should prove to be Cramer's *licaon*, the present will receive the name of *Philampelus posticatus* Grote. Hübner's figure, as remarked by Dr. Herrich-Schäffer, is rather dark, but this seems to be a general feature of all the figures of Sphingidæ given in the "Samm. Exot. Sch.," while the course of the lines and the roseate anal patch leave no doubt that this is the species intended. Both Mr. Walker and Prof. Burmeister wrongly refer Dr. Harris' *P. satellitia* to the present species. The former has, in addition, given a citation of a species under the name of *P. ampelophaga* Harris, which (vide Clemens) does not appear to exist.

Philampelus Achemon.

The habitat of Cramer's *S. Crantor* is, we believe, erroneously given as "Indes Orientales." The figure adequately corresponds to our species, which had been previously figured and described by Drury under the specific name we have here adopted.

Pachylia ficus.

Linnæus' description reads as follows: "S. alis fusco-nebulosis: posticis angulo ani albis. Alæ superiores in media puncto fusco; macula pallida ad apicem anticum; inferiores supra fasciis 2 fuscis." He refers to Merian's Pate No. 33. On this Plate M. Merian represents both the present species and its larva and also *P. inornata* Clemens, imago and larva, while the description separates two species to which different dates are given for the escape of the imagos from the pupæ. Linnæus' description conclusively refers to the larger species with banded secondaries, which is represented by M. Merian with wings extended. The second species, *P. inornata* Clemens, is represented poised on a branchlet, the primaries partly covering the secondaries, which latter are plainly nearly unicolorous and dark; the triangulate, costal, median, paler patch, and the totality of the characters, leave no doubt as to the species represented by this figure. The larvæ are represented as very distinct in ornamentation. We do not give, purposely, any references to M. Merian's work, or to those of authors anterior to Linnæus. In the works of these early Entomologists proper scientific nomenclature is not given, and, if we study them too critically, we can only lose a veneration which is evolved from the consideration of the early times in which the authors wrote, without reference to their ideas, which are too often erroneous, or to their figures, which are very generally defective. We see no propriety, then, in adopting the course of M. Ménétériés, in the matter of the synonymy of these two species, while

we agree with that eminent Entomologist that the two species are quite distinct. Prof. Burmeister confounds the two as sexes of one species, adopting Cramer's error. Mr. Grote's doubtful citation of Westwood's Ed. Drury is incorrect, and, so far as we are aware, the name of *Crameri* is first proposed by Ménétrés, whose remarks we cite: "Cramer a figuré Pl. 394, D, le *Ficus* mâle, et il y rapporte comme la femelle la figure 246, E, C'est a tort je crois qu'on a adopté son opinion; l'Académie possède les deux sexes de chacun de ces papillons, qui m'ont paru constituer deux especes différentes. Ainsi pour nous, la figure de Cr. 394, D, représente le véritable *Ficus* Cr., tandis que la figure 246, E, appartient a une autre espèce que nous avons nommée *Crameri*."

Smerinthus geminatus.

The synonymy of this species, as given by Mr. Walker and Dr. Clemens, seems to us quite erroneous. We find no description of this species as "*Sphinx geminata*" by Say, who, so far as we are aware, does not mention the species except in the first volume of the "American Entomology." *Smerinthus jamaicensis* Drury sp. seems to us, judging from Drury's figure and description, quite distinct from the northern species from the Atlantic District, while we have satisfied ourselves that *S. cerisii* Kirby is also distinct from its near ally—*S. geminatus*.

Smerinthus pavoninus.

A hitherto unidentified, and, since Geyer wrote, unnoticed species of *Smerinthus*, which the author mentions having received from Pennsylvania. It seems allied to *S. excæcatus*, while Geyer compares it with the European *S. ocellatus*; compared with the former, Geyer's figures offer too many points of distinctiveness to allow us to consider it as the species intended.

Smerinthus modestus.

The genus *Polyptychus* was erected by Hübner in his "Verzeichniss," for those species of *Smerinthus* which may be shortly characterized as possessing unocellated and differently shaped secondaries. As it stands, it contains dissonant material and cannot be accepted. Since we are disposed, generally, to regard the species first cited under Hübner's genera, as typically intended, we find in the present instance, that the Asiatic *Sphinx dentatus* Cramer, offers structural features which seem to authorize its generic separation from *Smerinthus* Latr. as typically intended, (with which latter, *Paonias* Hübner is synonymous) and that to this species, Hübner's genus may be restricted. On comparing *S. modestus* Harris with the European *S. populi*, we

find that the species are somewhat nearly allied, while our species offers differences in the structure of the antennæ and in the shape of the secondaries, especially in the structure of their costal margin. The form of the palpi and position of the head, very nearly correspond in the two species. We express the opinion that dissectional study will oblige the separation of *Smerinthus modestus* from the typical species first cited in our Catalogue, while for the present we leave it in the genus in which it was placed by Dr. Harris.

CRESSONIA, nov. gen.

A genus hitherto confounded with *Smerinthus* and *Polyptychus*, by authors; the single North American species distinguished by the following characters and without a described representative in the Old World:

The antennæ are rather short and blunt; in the male, doubly bi-pectinate, the pectinations stout and well developed, produced from beneath the antennal stem; in the female, the antennæ are simple. The small head is freer from the thorax than in *Smerinthus*, and neither so sunken in the prothoracic parts or so depressed. The acuminate palpi are longer, more freely scaled, held free from and exceeding the "front," divergent at the tips in the male; the clypeal squamation forms a produced ridge. The prothorax is squarer in front; above, the thoracic surface is more flattened, not roundedly elevated as in *Smerinthus*. The anterior wings are broad and large, excavate, between the nervules, along the external margin in the female, even, in the male. The "veins" are slight, the nervules more bent downwards and curvilinear than in *Smerinthus*, internal angle less exserted. The posterior



Anterior wing of ♀ *Cressonia*, natural size.

wings are full and rounded, not "cut away" before the anal angle on external margin—the latter emarginate in both sexes—differing prominently from *Smerinthus* in their general shape, being more rounded and not produced apically; the costal vein is basally divaricate, the nervules long, curvilinear and divergent. The abdomen is slender and elongate, and affords distinctive characters compared with that part in *Smerinthus*. In the male it is very long and slender, the anal segment provided with a terminal and lateral sub-tufts, giving a tri-partite appearance to the terminal segment, which is characteristic. This genus differs importantly from *S*.



Posterior wing of ♀ *Cressonia*, natural size.



Posterior wing of *Smerinthus*, (*geminatus*) natural size.

populi of Europe, which Dr. Clemens has, we consider wrongly, regarded as its "representative." The structure of the caputal parts in their entirety, in particular that of the palpi, offers distinctive features, and the position of the head and the characters drawn from the secondaries are *sui-generis*. *C. juglandis* is much slighter than *S. populi*, and its slender, elongate, corporal parts, contribute to give it an unusually strong Bombycid appearance, reminding one of *Apatelodes* and *Parathyris*. The species wants the bright colored scale-patch at the base of the secondaries, characteristic of *S. populi*. The ornamentation and coloration are peculiar; the parallel, oblique, transverse lines are even, not excavate or lunulate as in *S. populi*.

Dr. Clemens remarks, concerning the larva, that it is "granulated on transverse wrinkles, tapers anteriorly, the thoracic rings being slender. The head is pyramidal and granulated, the vertex elevated above the dorsum and bifid; caudal horn densely spined. The position of the larva at rest is not sphinx-like; it is extended along the midrib of a leaf, and when disturbed, throws its head from side to side, making a crepitating noise." And of the pupa, that it "is rough, with the terminal segments of abdomen flattened."

A study of the species comprising this Tribe has satisfied us, that its affinities are better served by according it a central position in the family, the Bombycid characters of the species detracting nothing from their Sphingid qualities. *Ambulyx*, in the preceding Tribe, has much affinity, in both larval and imaginal states, with *Smerinthus*, and the *Smerinthis* genus *Colax*, Hübner, shows very plainly affinities with the *Chærocampini*. A study of the figures of foreign *Smerinthini*, has confirmed this reference.

We name this hitherto undetected North American Sphingid genus after Ezra T. Cresson, of Philadelphia, whose sterling merit as an Entomologist we acknowledge, and for whose kindness as a friend, we have reasons to be grateful.

Macrosila quinquemaculata.

We have been unable to find any notice of this species by Haworth, in any of the works of that author which have been accessible to us. Mr. E. T. Cresson has likewise kindly assisted us in the research, and with the same result. The first notice of the species under this name, that we find, is by Stephens, in 1828, who calls the species "*Sphinx quinquemaculatus* Haw.," giving no reference or authority for the citation; hence the name may be merely a *MSS.* one of Haworth. In the latter view of the case, the name under which Hübner figures it in the

"Sammlung Exot. Schm.," will be retained and the species be known as *MACROSILA CELEUS*. We note Dr. Fitch's remarks in his Ninth Report, p. 212, where the date, 1802, is given for Haworth's description of this species, but no citation is given of any work to authenticate this reference. The critical remarks, intended to show that Dr. Harris committed an error in his "Catalogue of North American Sphinges," in describing the present species as *S. carolina*, are destitute of value, when we consider the brevity of Dr. Harris' description, the fact that both species occur in Massachusetts, and that they are properly separated in the "Insects Injurious to Vegetation."

DILUDIA, nov. gen.

The genera *Cocytius*, *Phlegthontius* and *Agrius*, erected by Hübner in his "Verzeichniss," appear to us untenable, for the reason that they contain dissonant material, while the species are quite confusedly arranged, showing that Hübner was very probably autoptically unacquainted with the species to a greater or less extent. We erect the present genus for certain robust American Sphingidæ which seem properly associated with neither *Macrosila* or *Sphinx*, and have been already superficially characterized by Mr. Grote as cinereous, roughly haired species of "Sphinx." The type is *Sphinx Brontes* Drury, (H-S., Grote) while other species will probably be found to be properly referred here as *Sphinx leucophæata* Clem., and *S. jasminearum* Boisd., with which we are autoptically unacquainted.

The head is large and salient; prothoracic parts well advanced before the insertion of the primaries. Wings ample; external margin nearly straight, not rounded; internal angle produced. Posterior wings with the external margin rather straight, excavate before anal angle. Abdomen long and stout; legs provided with stout spurs. The squamation is rough and cinereous, while the posterior wings are usually more or less suffused with darker shades and crossed by narrow black bands.

From *Macrosila*, the species differ by the straighter external margin of the primaries and by the exserted internal angle, in these characters resembling *Amphonyx*, while the normal palpal conformation, with a number of other characters, amply separate them from Prof. Poey's genus. We do not give further characters here, of a genus which we are satisfied should be erected, since we have insufficient material upon which to amplify from needed dissections.

Diludia brontes.

We refer to Mr. Grote's paper for the particulars of the synonymy of this species, lately discovered in the West Indies, and which conforms,

in our opinion, sufficiently with Drury's figure and description to warrant the assumption that it is the species intended. A comparison of Drury's description will disclose the fact, that the differences presented between the secondaries in Drury's figure and our species can be reconciled; there remain, then, but the differing habitat given by Drury and the superior size of his figure. When we remember the frequent errors of the older authorities as to the locality of the species they illustrate, we shall err if we accord too much weight to such references. Mr. Grote has commented sufficiently upon the characters of ornamentation which unite the Cuban species and Drury's figure, and we opine, that the name of *Sphinx cubensis*, proposed by Mr. Grote for the present species in the case that Drury's species were eventually more satisfactorily discovered, will not be available.

SYZYGIA, nov. gen.

Differing from *Diludia*, in the shape of the wings and proportions of the corporate parts, the present genus contains apparently two characteristic species of the present Family, which have hitherto been referred by authors to *Hyloicus* and *Sphinx*. The antennæ are very long and massive, and are characteristic. The head is large, as are the eyes, but not so salient as in *Diludia* and *Macrosila*; the prothorax is rather square in front, moderately advanced before the insertion of the primaries. These latter are much rounded along external margin; apices depressed. The posterior tibiæ are strongly spurred. The species composing this genus are characterized by their yellowish-cinereous squamation, which readily distinguishes them from the species of *Diludia*.

Our material is too scanty to allow us to eliminate the dissectional characters of this Southern genus, which, as intended here, will be readily recognized. The species are *Sphinx Pamphilus* Cramer, Pl. 394, fig. E, from Surinam, and *Sphinx afflirta* Grote, from Cuba. We give a figure of this latter species, already described by Mr. Grote in his paper on the Cuban Sphingidæ, and which will be found to differ sufficiently from Cramer's representation of *S. pamphilus*, as to render the supposition of their distinctiveness a tenable one.

Daremma repentinus.

We are indebted to the kindness of Mr. J. W. Weidemeyer for the information that Mr. Walker writes thus concerning *Daremma undulosa*, Walk. C. B. M. "This species is a mistake; it has been newly identified as a dwarfed and slightly aberrant specimen of *Sphinx Brontes*." Since we regard the "*Macrosila Brontes*?" Walker as

based on specimens of Dr. Clemens' *Ceratonia repentinus*, which is in our opinion structurally distinct from *Ceratonia quadricornis* Harris, we are led to propose that Mr. Walker's genus be retained for this species, which differs from the allied genera here cited, in the reduced capital and prothoracic parts, characters which ally it to *Ceratonia* Harris, and which, perhaps, occasioned Dr. Clemens' reference. Since, under the circumstances, it would hardly be possible to satisfactorily identify this species from Mr. Walker's description of it as *Daremma undulosa*, we have retained the trivial name proposed by Dr. Clemens, though posterior in point of time. We have adopted the views of Mr. Grote on the synonymy of this species, which has been strangely confused hitherto by authors with Drury's *Sphinx brontes*.

Ceratonia amyntor.

We do not comprehend Dr. Clemens' citation of Hübner, as authority for *Ceratonia quadricornis* Harris, unless it is a confusion arising from the initial letter placed by Dr. Harris after his new species, in the "Catalogue of N. Am. Sphinges" and elsewhere. To our knowledge Hübner never described the present species, but it is acceptably figured as *Agrius Amyntor* by Hübner in the "Sammlung, Exot. Schm." Hübner could hardly have given this species a trivial name drawn from larval characters, since these could scarcely be known to him. He regarded the species as belonging to the genus *Agrius*, erected in 1816 in the "Verzeichniss." Since this cannot be accepted, the term *Ceratonia*, proposed by Harris in 1839, must be retained for the genus, which is represented by a single species of common occurrence in the Atlantic District, and for which, following the law of priority, we must retain the specific name under which Hübner has figured it.

Sphinx chersis.

A similar error has been made by both Mr. Walker and Dr. Clemens in the synonymy of this species, described as *S. cinerea* by Dr. Harris, as in the case of *Ceratonia quadricornis* Harris, above stated. Hübner's figure is quite recognizable, and executed with the accustomed felicity which characterizes the illustrations in the "Sammlung Exot. Schmetterlinge." Hübner refers the species to his genus *Lethia*, erected in the "Verzeichniss," and which term may yet be used for the species here included under *Sphinx*, should Linnæus' generic term be used in a different sense from that in which later authorities regard it.

HYLOICUS.

The species here included under this generic term, we are led to consider

as congeneric with *Sphinx pinastri* Linn. of Europe, a species which is typical of Hübner's genus *Hyloicus*, erected in the "Verzeichniss." Mr. Walker has included these species under *Anceryx* Boisd., which, we consider, contains two distinct genera; for the first we retain the present term, while the second has been already separated under the generic term *Erinnyis* by Hübner in 1816, and adopted by Mr. Grote in his paper already cited. *Dilophonota* Burmeister, is a simple synonym of *Erinnyis* Hübner, composed of the same species, and containing consonant material, which is not the case with *Anceryx* Boisd., as adopted by Mr. Walker. Since Abbot's figure of *S. coniferarum* Smith, does not correspond with the Northern species described as *Ellema Harrisii* by Dr. Clemens, and which latter species seems respectively the *Sphinx coniferarum* of Harris and *Anceryx coniferarum* of Mr. Walker, we keep the two names separate, leaving the matter to future elucidation, the reader, that there is a doubt on our minds that Dr. Clemens' species is really congeneric with *Hyloicus pinastri*, though probably but one species should be here considered. While Dr. Clemens describes *Sphinx coniferarum* from Abbot's figure, he adds: "From S. H. Scudder, Canada, near Buffalo, N. Y." This reference would seem to indicate that the species had been identified, which we presume, however, is not the case.

Erinnyis Kilo.

In a "Catalogue des Insectes recueillis a la Guyane Francaise—par M. A. Fauvel, Membre de la Société Entomologique de France, etc—five species of Sphingidæ are enumerated, chiefly remarkable for the extraordinary synonymy retained by the author. Among them is a "*Deilephila Hello* Boisd.," which is probably to be understood as referring to the present species.

In concluding these Notes, we would commend the descriptions of the larvæ of certain species of North American Sphingidæ, given by Mr. Lintner in the pages of the Proceedings, expressing the hope that these will be continued until the larvæ of all the accessible species shall have been described. This will greatly assist in defining the limits of groups and genera, many of which are as yet imperfectly prescribed.

In the present "Catalogue" we have endeavored to make the synonymy as exhaustive as was possible, aided by the good offices of Mr. Stephen Calverley and Mr. E. T. Cresson. The genera we have retained appear to us to contain consonant material, while we have indi-

cated in certain instances, viz: *Perigonia* and *Chærocampa*, the existence of groups and species, which seem to make critical dissectional studies and comparisons necessary to decide whether these do not, in fact, afford distinct generic types. Since Mr. Walker compiled the synonymy of the North American Sphingidæ in 1856, no work has appeared to our knowledge, on either side of the Atlantic, which has entered into the synonymy to any original extent, and while we trust that in the present Paper we have improved upon the arduous labors of the English Entomologist, there undoubtedly remain certain points to be elucidated and, perhaps, some citations to be added. The severer study of the monographist will find in the North American representatives of this interesting Family, a profitable and, as yet, an unharvested field.

The following species we regard as doubtful, for the several reasons appended to the citations:

"*Macroglossa Thetis*, Boisd., Ann. Soc. Ent. Fr. Siem. Ser."

This citation, given by Dr. Clemens without further reference to the species, is all that we know, of what is probably a Californian species, hitherto undescribed. It is improbable that it belongs to the genus *Macroglossa*, since, properly speaking, this has not hitherto occurred in North America. Bearing in mind the vague sense in which this generic term has been used by Dr. Boisduval, it is profitless to hazard any conjecture in this respect.

"*Sphinx Japix*, Cramer, Exot. Vol. 1, p. 137, pl. 87, fig. C."

This species has not been discovered since Cramer wrote. The locality given by Cramer of New York, is probably incorrect, unless the gross figure disguises one of our familiar species.

"*Perigonia undata*, Walker, C. B. M. Lep. Pt. 8, p. 103."

This species is erected upon a fragmentary specimen (abdomen and hind wings wanting) in the British Museum, received from Jamaica.

"*Deilephila oxybaphi*, Clemens, l. c. p. 145."

This species is described from a larva feeding upon the exotic plant "*Oxybaphus nyctageneus*." Under the circumstances it seems improper to include the name in the present Catalogue, since the species cannot be said to be fairly established.

"*Sphinx chiron*, Drury, Exot. Vol. 1, p. 56, pl. 26, fig. 3."

The specimens described as "*Chærocampa chiron*," by Mr. Walker in the C. B. M., seem to belong to the species figured very acceptably by Cramer under the specific name of *Nechus*, and to which latter figure, Cuban specimens, examined by us, accurately correspond. Drury's figure differs in the color of the body and in the shape and coloration of

the primaries, so that it seems better to retain Cramer's name for the species, waiting for larger material, which might develop a variation corresponding with Drury's figure and description.

"*Chaerocampa thalassina*, Clemens, l. c. p. 150."

The habitat of this species is unknown.

"*Chaerocampa drancus*, Clemens, l. c. p. 151."

Sphinx drancus Cramer, as before remarked, is stated by the original illustrator of the species, to be from the "Indes Orientales." The species does not seem to have been re-discovered since Cramer wrote, certainly not from the West Indies.

"*Pachylia Lyncea*, Clemens, l. c. p. 159."

This species is probably distinct from *P. ficus*, and, in this event, should retain the name proposed by Dr. Clemens, who supposed the specimen described to be the male of Linnæus' species.

"*Sphinx scyron*, Cramer, Vol. 4, p. 23, fig. 201,"

The specimens determined as *Anceryx Scyron*, by Mr. Walker in the British Museum, probably belong to *E. rimosa* Grote. Cramer's figure is too defective to hazard ought but conjecture as to the species intended.

"*Hyloicus Dynæus*, Hübner, Zutr., Steg. Hund., p. 19, figs. 463, 464."

This species, cited by Mr. Walker as a doubtful synonym to "*Anceryx plebeia*," and by Dr. Clemens to "*Dolba Hylæus*," is from Bahia (Brazil) and, judging from the as usual excellent figures of Hübner, represents a totally distinct species, hitherto undiscovered within the geographical limits considered in the present "Catalogue."

ERRATA.

For "*Chaerocampa*," wherever we have used it ourselves, read "*Chærocampa*."

Page 160, line 21, for "Am. Soc. Ent. Fr. t. 3. 3ieme Ser. 32," read "Ann. Soc. Ent. Fr. t. 3, 3ieme ser. Bull. p. xxxii. (1855.)"

ON PHYTOPHAGIC VARIETIES AND PHYTOPHAGIC SPECIES,
with remarks on the Unity of Coloration in Insects.

BY BENJ. D. WALSH, M. A.

DATANA MINISTRA, Drury. (Lepidoptera.)

Messrs. Grote & Robinson (*Proc. &c.* IV. p. 491) seem to be of opinion, that the black larva found on the hickory may produce a different species of *Datana* from the yellow-necked and striped larva found on the oak, the apple, &c. The objection to this hypothesis is, that a larva intermediate between these two forms, viz: with the longitudinal stripes but without the yellow neck, occurs, as I have already stated, (*Proc. &c.* III. p. 403) both on the hickory and on the oak. Mr. Lintner indeed tells me, that from the black larva found on the hickory he reared what he considers as the *D. contracta* of Walker; but from this same black larva I myself reared the normal form of *ministra*, (*ibid.*) and also other forms which approximate in some of their characters towards *contracta* Walker and towards *perspicua* Gr. Rob. In fact I have little doubt that both these last so-called species are mere varieties of *ministra*, based upon extreme specimens. For the distinctive characters, which are assigned to each of them, are not found exclusively in one set of specimens bred from one kind of larva, but occur promiscuously, with all the intermediate grades, sometimes in one set of specimens, sometimes in another, as I shall now proceed to show.

According to Walker as quoted by Morris (*Synop.* p. 247) *Datana contracta* differs chiefly from *D. ministra*, 1st, in having narrower front wings; 2nd, in the brown wing-bands being edged externally with whitish-tawny; 3rd, in the second wing-band being nearer the first on the hind border of the wing. As to the first distinctive character, I have before me, *a* Fitch's figure of *ministra*, (*N. Y. Rep.* I. Pl. iv. 3,) *b* Harris's figure of *ministra*, (*Inj. Ins.* Pl. vi. 6,) *c* 1 ♂ and *d* 1 ♀ bred by myself from the normal yellow-necked larva found on the oak, *e* and *f* 2 ♂ and *g* and *h* 2 ♀ bred from the black larva found on the hickory, and *i* one captured ♀. On the most careful measurements of all these, I find that, making the extreme breadth of the front wing 100, its proportional length is in *a* 191, in *i* 192, in *c* 195, in *b* 200, in *g* 202, in *h* 208, in *e* 211, in *f* 212, and in *d* 213. Evidently, therefore, this character is too variable, and connected by too many intermediate grades, to be of specific value. As to the second distinctive character, it is absent in *a*, *b* and *h*, faint in *c*, moderate in *e* and obvious in *d*, *f*, *g* and *i*.

Here again, therefore, there are too many intermediate grades to make the character worth anything. As to the *third* distinctive character, making the length of the wing 100 in each of the above, the proportional distance of the first wing-band from the second wing-band on the hind border of the wing, from centre to centre, is in *d*, *e* and *g* 5, in *c* 7, in *i* and *h* 9, in *f* 10, in *b* 15, and in *a* 16. In other words this character is proportionally three times as strong in some specimens as in others, with intermediate grades from one to another. In *perspicua* Gr. Rob. this proportional distance is equal to nothing, the first wing-band being confluent behind with the second. Yet, although this seems the most remarkable of the abnormal characters concentrated in *perspicua*, it is not enumerated by Grote & Robinson among the distinctive characters of that so-called species. It may be added here, that Walker gives it as a character of *ministra*, but not of *contracta*, that "the space between the first and second wing-band is a little darker than the wing elsewhere," whereas Fitch calls this form variety *e* of *ministra*, and in fact this character is absent in *a*, *b* and *h*, very faint in *c* and *e*, moderate in *d* and *g*, and obvious in *i* and *f*; and is said likewise to occur in *conspicua* Gr. Rob. Here again, therefore, it is impossible to draw a definite line anywhere. Moreover Walker gives it as a sexual character of the ♂ *ministra* that it has one discal brown spot, and of the ♀ that it has two discal brown spots in the front wing. Whereas it is proved by the specimens now before me, that the presence or absence of one or both discal spots is not a sexual character at all. Evidently this author has described, not the *species*, but the *individual*, and must have worked on a very limited number of specimens.

According to Messrs. Grote & Robinson *D. conspicua* "may be quickly distinguished from the hitherto described species of the genus, 1st by its more yellow color, 2nd by the narrow anterior wings, 3rd by the transverse lines not bordered with paler shades, 4th by the produced apices [of the front wings], 5th by the obsolete irrorationes [of the front wings], 6th by the wider terminal space and the more crowded transverse lines." (*Proc. &c.* IV. p. 490.) To take up these characters in order, 1st in a colored impression of Mr. Grote's figure of *perspicua*, obligingly furnished to me by that gentleman himself, the color of the front wing is only a shade or two yellower than in *c* and *g*, and Fitch correctly states that in *ministra* "the fore wings vary from pale buff yellow to russet and auburn brown." (*N. Y. Rep.* I. p. 239.) 2nd. Taking Mr. Grote's figure of *perspicua* as correct, and making the extreme breadth of its front wing 100, its proportional length is only

208, or considerably *less* in proportion, instead of *much more*, than it is in *e*, *f* and *d*. (See above under the first distinctive character of *contracta*.) 3*rd*. See above under the second distinctive character of *contracta*. 4*th*. In the figure of *perspicua* the apex of the right front wing is scarcely produced at all, and that of the left front wing but very slightly. In *h* they are produced fully as much as in the above figure, and in *i* the right wing is produced a great deal more, with a deep excavation behind the apex, and the left wing not at all, with no excavation whatever behind it. 5*th*. In *d* the irrorationes are obsolete, and subobsolete in *c*. 6*th*. Making the length of the front wing 100, the proportional distance from the middle of the terminal fringe to the middle of the subterminal wing-band, from centre to centre, is in *g* 15, in *i* 17, in *a* and *b* 18, in *e* 19, in *c*, *d* and *f* 20, and in *h* 22. In *conspicua*, according to Mr. Grote's own figure, it is only 21, or *less*, instead of *much more*, than it is in *h*. Consequently all the above distinctive characters are connected by intermediate grades, and therefore worthless. Neither is it true, as is stated in the description of *perspicua*, that *ministra* differs from *perspicua* in the brown color of the anterior part of the thorax always "extending unicolorously over the prothorax." For in *d* and *g* the anterior part of the brown patch is distinctly ferruginous, and in *f* and *i* it is less obviously so. Indeed Fitch describes *ministra* as having always "the fore part of the thorax bright orange or tawny yellow, this color being deeper or brownish towards its posterior edge." Like Mr. Walker, Messrs. Grote & Robinson seem to have had but a very poor supply of material to work on.

On the whole, even in the few specimens now before me, the above characters are so inextricably intermixed, that if *contracta* and *perspicua* are distinct species, then every one of the seven specimens before me must also be a distinct species. The truth of the matter seems to be, that *ministra* is a very variable species, and that collectors, as they usually do, have seized hold of a few extreme varieties and forwarded them to systematists, who have thus been deceived into treating those extreme varieties as species. *Datana conspicua* is confessedly founded upon a single specimen, and we have but to refer to Dr. Fitch's *Vanessa Lintnerii* and *Nathalis Irene*, in order to perceive how dangerous it is to found new species upon solitary specimens of variable species. As to the former species, Dr. Morris concedes that it is probably a variety of *Antiopa*. As regards the latter, a few years ago *Nathalis Iole* swarmed near Rock Island; and I took in profusion in company with each other all the intermediate grades between the nor-

mal *Iole* and Fitch's *Irene*, and many other varieties besides. Indeed Mr. Edwards, to whom I have forwarded most of the above varieties, expressly asserts that "*Irene* Fitch is simply *Iole* with a trifling variation." (Morris *Synop.* p. 351.) Just in the same way Dr. Harris made five species out of the very variable Orthopterous *Tetrix ornata* Say, and Dr. Fitch has made three species of the Homopterous genus *Athysanus*—*variabilis*, *fenestratus* and *minor*—out of a single wonderfully variable one, which I have found in profusion on the same birch tree in the three forms quoted as species by Dr. Fitch, together with all the intermediate varieties, and enough others, not noticed by Dr. Fitch, to make a dozen species as good as his.

Taking all the facts into consideration, I do not think that we are entitled to assume that the black larva found on the Hickory is what I have called a Phytophagic Species—i. e. that it has ceased to intercross commonly in the imago state with the normal form found on other trees—but only that it is a Phytophagic Variety. In the course of an indefinitely long time, it may perhaps cease to intercross with the normal form; and then by the Laws of Inheritance the distinctive characters, which are now connected by intermediate grades, will cease to be so connected, and the Hickory form will become to all intents and purposes a true (Phytophagic) species. We find a good exemplification of this stage in the process in the following species.

HALESIDOTA* TESSELLARIS Sm. Abb. (=ANTIPHOLA Walsh) and
H. HARRISII Walsh (=TESSELLARIS Harris non Sm. Abb.)
(Lepidoptera.)

I have this year carefully compared several dozen larvæ of the above two (Phytophagic) species, and find that the mature and nearly mature

*As to the orthography of this genus, Mr. Grote has the following remarks:—"Mr. Walker, in transcribing the generic name *Erinnyis* from Hübner, has altered it to *Erinnyis*—for what reason I know not. As is the case with *Halesidota* and *Amblypterus*, which read *Halesidota* and *Amblypterus* in the Cat. B. M., I presume it is the result of a simple error of transcription." (Proc. &c. V. p. 79.) Clearly, in all these three cases, it is no casual error of transcription, but a rectification of Hübner's bad Greek. Authors of course are at perfect liberty to coin gibberish generic names; and so far as my own private tastes are concerned, I infinitely prefer a good, sonorous, gibberish name, such as *Rembus*, *Clambus*, *Agabus*, *Datana*, *Nadata*, &c., to the general run of would-be Greek ones. But when a generic name is manifestly intended to be Greek—and more especially when a Greek derivation is printed along with it, so as to prevent us, which we should otherwise often do, from considering it as gibberish—most writers conceive that they are at liberty to spell it correctly, and reduce it to

individuals of each differ constantly by the characters given in the following Table. The very young larvæ, i. e. 15—20 inch long, are scarcely distinguishable, being each of them without any pencils, and each of them having the head yellowish-white, but rather yellower in the former than in the latter, and the dorsal integument yellowish-white, with the warts brown-black as in the mature *Harrisii*. But so soon as ever they obtain pencils, which is probably after the first moult, the two middle pencils on segment 3 are invariably black in *tessellaris* and invariably orange-color in *Harrisii*, although occasionally in individuals, which are less than half grown, the other colored pencils incline more or less towards white. The color of the hair is, as I formerly supposed, normally white in *Harrisii*, but a few individuals occur with the hair of a dirty white like that of the normal *tessellaris*. On the second segment there is in *Harrisii* but a single distinct white pencil under each orange one, the second white one, which is very distinct in *tessellaris*, being confounded with the long hairs overhanging the head. (See *Proc. &c. III.* p. 414.) And the white pencil on segment 12 is much less obvious in *Harrisii* than in *tessellaris*, and generally almost obsolete, being confounded with the long hairs overhanging the anus.

something like a grammatical form. Some years ago the Editors of Silliman's Journal, having occasion to rectify the orthography of one of Prof. Owen's scientific terms, which was manifestly intended for Greek, observed that it was right and proper to do so, however long and universally the term had been in use.

Even authors who maintain, that under no circumstances is it allowable to change a single letter in a published name, unless that name be preoccupied, do not always practice what they preach. For example, Osten Sacken, who avows this doctrine as the true scientific faith, has recently omitted the letter *q* (*quercus*) in the specific names of a whole host of the *Cynipidæ* of the Oak, professedly "because this addition seems perfectly useless." (*Proc. &c. IV.* p. 344.) It may perhaps be useless, as applied to the *insect*, but as applied to the *gall*, which is usually designated by the specific name of the gall-maker, it seems to me to answer a very useful and desirable purpose, i. e. to specify on what genus of plants the gall grows. Otherwise who is to distinguish between the *Cynipidous* gall "[Q.] *tubicola* O. S.," which grows on an Oak, and the *Cecidomyioidous* gall "*Tubicola* O. S.," which grows on a Hickory? But be this as it may, if we have no right to change *Amplipterus*, which is impure and barbarous Greek, into *Amblypterus*, which is pure Greek and means "obtusely-winged," we certainly have no right to change *Cynips q. forticornis*, which is neither preoccupied nor grammatically objectionable, into *Cynips forticornis*. We might just as reasonably change such elegant specific names as *acerifoliella* (maple-leaving) and *rhoifruetella* (sumach-fruitling) into *fotiella* and *fructella*.

H. tessellaris, mature larva. H. Harrisii, mature larva.

Head	black,	rufous.
Dorsal integument	greenish-black,	yellowish-white, with the warts and a ring round each spiracle brown black.
The two middle pencils } on segments 2 and 3	black,	orange color.
The two pencils on segment 11 }	black,	milk-white.

Now if, in the imagos of any two insects, we found constant distinctive characters one-quarter as strong as the above, no entomologist would hesitate for a moment to pronounce them distinct species. For example, *Colias Philodice* Godt. is universally, and with justice, allowed to be distinct from *C. Eurytheme* Bdv., although the only constant character that separates them is, that the first has sulphur-yellow wings and the last orange-colored wings. Yet how slight is the difference between sulphur-yellow and orange-color in these two species, when compared with the difference between the black pencils of *tessellaris* and the orange-colored or milk-white pencils of *Harrisii*! And how can we consistently rely upon a single constant character to separate two imagos, if we refuse to acknowledge the validity of four constant distinctive characters to separate two larvæ?

It is easy to say that one of these two forms is a mere "larval variety" of the other; (see *Proc. &c.* III. p. 536;) but those who use such language misunderstand the very meaning of the term "variety." True it is that many larvæ vary astonishingly; but then in their case, as in every ordinary variety, we find the intermediate grades also. While here, as regards the four distinctive characters pointed out above, out of scores of specimens of the mature or nearly mature larvæ that I have examined, I have not found a single one that presented any intermediate grade whatever.

No entomologist hesitates to consider two imagos as distinct species, merely because the larvæ are undistinguishable. In many families, indeed, e. g. *Cynipidæ*, *Apidæ* and *Muscidæ*, very many larvæ bear so close a resemblance to each other, that he would be a bold man who pretended to distinguish them. Why then refuse to consider two well characterized larvæ, like *tessellaris* and *Harrisii*, as distinct species, merely because their imagos are undistinguishable? Why lay all the stress upon the characters of the imago, and none at all upon those of the larva or pupa? This is as irrational, as if an entomologist were to cut off and throw away the wings and legs of every imago which he is studying, and persist in classifying it from the consideration of its body

alone; much in the same way as Conchologists used formerly to neglect and undervalue all the soft parts of a Mollusk, and decide on its systematic affinities only from the characters of its shell.

But although it is difficult to assign any good reason for making the imago the sole criterion of specific identity, it may be readily understood how the practice originated. The imago is easily preserved so as to retain its characters unimpaired; the larva is preserved with difficulty, and frequently cannot be preserved at all without losing its shape and its color. The imago may be collected vicariously, and studied in the closet a thousand miles from its habitat; in order to study the larva, the naturalist must, in many cases, go forth personally into the woods and the fields, and contemplate the living animal on the very spot of ground where, and at the very time of year when, it is to be met with. Hence the imago with many systematists has become everything, the larva and pupa nothing. But if it so happened that larvæ were easily preserved in cabinets, and imagos with difficulty, then it is not improbable that closet-naturalists would neglect and undervalue the characters of the imago, just as many of them now neglect and undervalue those of the larva. Genera and species would then be characterized almost exclusively from the consideration of the larva, just as they now are characterized almost exclusively from the consideration of the imago; and entomologists would be no more disconcerted at finding two distinct species undistinguishable in the imago, than they now are at finding two distinct species undistinguishable in the larva state.

On the general principle that, whenever two insects differ by constant and well-marked characters in any of their states, whether egg, larva, pupa or imago, they must be specifically distinct, unless they be the sexes or other dimorphous forms of one and the same species, the case of *tessellaris* and *Harrisii* might be rested here. But there is additional evidence of their specific distinctness. The former occurs upon a great variety of trees—oak, basswood, elm, hackberry, hickory, thorn, soft maple, and, according to Abbot, on beech, hornbeam, and plum—but never, as I have this year carefully noticed, upon sycamore, (*platanus*;) the latter occurs exclusively upon sycamore. At first sight we might account for these facts, upon the hypothesis that the colorational peculiarities of *Harrisii* are due to its feeding upon sycamore; and that if a young *tessellaris* were fed upon sycamore, it would gradually, as it approached maturity, pass into *Harrisii*; in other words, that the two so-called species are mere Phytophagic Varieties. But experiment demonstrates the fallaciousness of this supposition. I have this year suc-

ceeded in forcing two out of twenty-seven *tessellaris* to feed upon sycamore for about forty days, till they finally spun up; yet to the very last they retained all their own distinctive characters, and showed not the slightest disposition to assume those of the other species. What is very remarkable, out of forty-three *Harrisii* that I fed this year upon oak, not a single one lived to spin up; but so long as they remained alive in the breeding-cage, which was on the average about five days, the only approximation that they made towards *tessellaris* was, that their hairs (not their pencils) generally became of a dirtier white.

In order to judge of the effects of food upon these two insects, I have this year tried the following experiments under precisely similar conditions, and with every possible precaution to guard against error. *1st.* I fed upon oak a lot of *tessellaris* found upon Oak, in Breeding-cage No. 3. *2nd.* I fed upon Oak a lot of *tessellaris* found partly on Thorn, partly on Basswood, and partly on Hickory, in Breeding-cage No. 4. *3rd.* I fed upon Sycamore a lot of *tessellaris* found partly on Oak and partly on Basswood, in Breeding-cage No. 5. *4th.* I fed upon Oak two distinct lots of *Harrisii* found upon Sycamore, in Breeding-cages Nos. 6 and 7. An accurate record was kept of the phenomena presented by each lot, which, for the sake of brevity and for the convenience of comparisons, has been reduced to the following tabular abstract. About three-fourths of the larvæ in each lot were quite young, ranging from .30 to .50 inch in length, and scarcely any were admitted that appeared to be more than half grown.

HALESIDOTA TESSELLARIS.								
	Number of larvæ fed.	Percentage found in Breeding-cage			Average* number of days when found			
		dead	missing	spun up	dead	missing	spun up	
No. 3 Retained on Oak	20	15.0	50.0	35.0	5.0	16.1	29.9	
No. 4 Shifted on to Oak	23	0	86.9	13.1	0	17.1	33.7	
No. 5 Shifted on to Sycamore	27	11.1	81.5	7.4	5.7	5.7	40.0	
HALESIDOTA HARRISII.								
No. 6 Shifted on to Oak	21	47.8	52.2	0	5.4	2.5	0	
No. 7 " " "	20	30.0	70.0	0	4.7	4.3	0	

* I give here and elsewhere what is, strictly speaking, the average number, and not the medium number. The two things are often confounded together, but are quite different. For example, if one larva dies in 4 days and three die in 8 days, the *average* number of days is seven, but the *medium* number is six. I suspect that certain writers, who profess to give the average dimensions of insects, give, in reality, nothing but the medium dimensions. To calculate the average dimensions of forty or fifty specimens, requires that every one of the forty or fifty should be measured. To calculate the medium dimensions, all that is necessary is to measure the smallest and the largest.

Hence we may conclude 1st, that *tessellaris* may, without very material injury to its health, be shifted on to Oak from the other trees on which it naturally feeds; for although, of those that were retained on Oak, a much larger percentage spun up than of those that were shifted on to Oak from other trees, yet a considerable percentage of the former, and none whatever of the latter, died in confinement. 2nd. That Sycamore is not a congenial food for *tessellaris*; for a considerable percentage of those fed on Sycamore died in confinement, and but a small percentage spun up. 3rd. That Oak is abhorrent to *Harrisii* as a food-plant.—It may seem strange at the first view, that *tessellaris* can be compelled to feed upon Sycamore up to the time of its assuming the pupa state, and *Harrisii* cannot be compelled to feed for any length of time upon Oak; but when we consider that in a state of nature the former is polyphagous and the latter monophagous, our surprise will cease. It is not that *Harrisii* does not eat the oak-leaves furnished to it—for the quantity of excrement on the floor of the Breeding-cage at each shifting and cleaning out proved that it must eat them—but that, having eaten them, it either perishes of disease superinduced by the unnatural food, or bores its way out in despair through the millinet of the Cage, or devours its own brethren in default of its natural food-plant.

It will be observed from the Table that in Nos. 5, 6 and 7 the average number of days when the larvæ were found missing is small, being only a little over four days; whereas in Nos. 3 and 4 it is large, being a little over sixteen and a half days. The reason of this difference is, that in the former, as soon as the larvæ were placed on the leaves, they commenced endeavoring to escape; whereas in the latter, they mostly staid contentedly on the leaves until they were full-grown, when many escaped from the Breeding-cage, probably in search of a more convenient place in which to spin up.

On the whole—however disagreeable it may be to systematists to concede, that two perfectly distinct insects may be undistinguishable in the imago state, and consequently that something more is necessary, towards the definitive establishment of specific distinctions, than the mere comparison of cabinet specimens of the imago—we must, I think, in view of all the above facts, decide that *tessellaris* and *Harrisii* do not belong to the same species. If, indeed, we first lay it down as a law, that all forms that are undistinguishable in the imago are identical, then all such facts as the above will go for nothing. But to do this is merely begging the question and arguing in a vicious circle. We might

just as reasonably first lay it down as a law, that all imagos that have abdomens of the same size, shape and color are identical, and then torture Nature to fit the Procrustean bed, which we have predetermined in our own minds that she shall lie upon, whether or nay.

There is a partial parallel to the case of these two *Halesidota* in the "alternate generations" of certain Radiata. "It is curious," we are told, "that while very dissimilar Jelly-fishes may arise from almost identical Hydroids, we have the reverse of the proposition, in the fact that Hydroids of an entirely distinct character may produce similar Jelly-fishes." (*Seaside Studies* by E. C. and A. Agassiz, p. 43 and see p. 75.) Here two given lines either diverge after converging, or converge after diverging. But in *Halesidota* the lines first converge, then diverge, and then converge again. For it has been shown, that the very young larvæ of *tessellaris* and *Harrisii* are very nearly or quite undistinguishable, that the mature larvæ differ as widely as any two species of the same genus can well do, and that finally the imagos become absolutely undistinguishable.

On the supposition that *tessellaris* and *Harrisii* sprang from the same pre-existing species, and consequently that they were primordially undistinguishable in the larva state, as they still are in the imago; we may account for their larval differences by assuming, that the colorational peculiarities of the two larvæ afford them a partial protection against birds and against ichneumon-flies and other predaceous insects, and were gradually assumed on the Darwinian theory of Natural Selection. We know how many lepidopterous larvæ are partially protected from birds &c. by simulating twigs or the bark of the tree on which they live; and it is not at all impossible that the orange pencils &c. of *Harrisii* and the black pencils of *tessellaris* may be mistaken by birds and insects for a process of the particular plants on which they feed. If we reject this assumption, we can only attribute the differences of the two larvæ to what Darwin calls "Divergence of Character," super-induced by breeding "in-and-in" for ages; in the same manner as geographical varieties come to differ in process of time from one another and from the original type.

SPHINGICAMPA DISTIGMA Walsh and DRYOCAMPA BICOLOR Harris.
(Lepidoptera.)

Having been fortunate enough to meet this year with three larvæ exactly similar to that which I have described as *D. bicolor*, (*Proc. &c.* III. p. 425,) I had hoped to solve definitively the question of what imago they would produce. Being confined, however, in a cage with millinet

sides, they all three bored through the millinet and escaped; and I now recollect that the thirty or forty *Dryocampa*, that I have bred in different years, were all bred in a cage with sides of wire-gauze; although, singularly enough, I bred my *S. distigma* in a millinet cage, and not a single larva of some twenty that I had on hand, bored its way out. The above question, therefore, must remain for the present in abeyance; but I clearly ascertained that the *bicolor* larva is not the immature form of some other *Dryocampa*—*stigma* or *rubicunda* for example—for all my three specimens retained their peculiar colorational and structural characters up to the date of their disappearance.

ARHOPALUS ROBINIÆ Forst. Walsh and A. PICTUS Drury Walsh.

(Coleoptera.)

The larva of *pictus* has been fully described and figured by Osten Sacken. (*Proc. &c.* I. pp. 121-2.) That of *robinix*, as I have already observed, has never yet been fully described. On June 29 I procured six of them, .55—.75 inch long, from a branch of locust one and a half inch in diameter, which they had completely honeycombed, heartwood and all. They differ in the following particulars from *pictus* as described by Osten Sacken:

1st. They have very distinct, though small, brown-black legs, the first pair placed halfway from the centre of the sternum to the lateral edge, and upon that fleshy, transverse fold behind the prosternum and separated by a furrow from it, which is said by Erichson to occur in all *Cerambycidæ*; the third pair on the metasternum in range with the first; the second pair on the mesosternum considerably inside of a line connecting the first and third. This latter arrangement is probably due to the thoracic spiracle being, as in all *Cerambycidæ* as distinguished from *Lamiidæ*, located on the mesothorax and so crowding the leg inwards. Each leg is conical, not quite .02 inch long, with a basal diameter of over .01 inch, and 3-jointed, with the last joint a little prolonged in a slender thorn. According to Erichson as quoted by Osten Sacken, all Longicorn larvæ, except those of *Lamiidæ*, "have feet, which, however, are sometimes so small as to be perceptible only when magnified even in large-sized larvæ." (*Proc. &c.* I. p. 119.) Yet not only does Osten Sacken describe and figure the larva of *pictus* as apod, but he expressly says that "the larva of *Arhopalus* has no feet, although belonging to the *Cerambycidæ*." (*Ibid.*) Can it be possible, that of two such closely allied species as *robinix* and *pictus*, one is apod in the larva state and the other has distinct feet? Or are the feet mi-

microscopically minute in *pictus*, so that they were inadvertently overlooked by Osten Sacken? *

2nd. When alive these larvæ were not at all clavate in front, neither were the thoracic segments flattened above and below, as the larva of *pictus* is described and figured by Osten Sacken, most probably from alcoholic specimens. Yet after being immersed in alcohol for three and a half months, both these characters made their appearance, although the prothorax is still, as compared with the middle abdominal joints, only as thirteen to eleven wide, even in the most strongly clavate specimens, whereas Osten Sacken figures that of *pictus* as in the proportion of thirteen to seven. Since, however, he describes the prothorax of *pictus* as "twice broader than long," which is also true of *robinæ*, the above difference is probably due to his specimens having been preserved in too strong alcohol, so as to shrivel up the abdomen unduly.

3rd. When recent, the prothorax is not "brownish-yellow," but whitish like the rest of the body, with four transversely arranged, roundish, brownish-yellow, dorsal spots. In the alcoholic specimens, the entire body assumes a more or less brownish tinge on the dorsal and ventral surface, which is less obvious laterally; but even then the prothorax is usually no darker than the rest of the body.

Besides the above two (Phytophagic) Species, there is a third species

* Baron Osten Sacken has obligingly sent me one of the larvæ from which his description was drawn, and which, as he says, was communicated to him by Dr. Horn, "along with the pupa and the recently escaped imago;" and it absolutely has no feet at all and no vestiges of any feet, under the most powerful lens. Now, even if we assume that Dr. Horn was mistaken as to the identity of his larva, which, as Baron Osten Sacken well suggests, can scarcely have been the case, to what imago could it pertain? If it pertained to any other Cerambycidae—e. g. *Chion garganicus* Fabr. which is our commonest hickory borer—then there is the same anomaly of a Cerambycidous larva without any feet. If it pertained to a Lamiide—e. g. *Monohammus tigrinus* DeGeer, which, according to Dr. Fitch, commonly inhabits the hickory in Pennsylvania—then we have the other anomaly of a Lamiidous larva with its thoracic spiracle, not where according to Erichson it ought to be, viz: in the fold between the pro- and mesothorax, which fold as it bears the front legs in *robinæ* must necessarily be prothoracic and not mesothoracic, but on the side of the mesothorax as in *Cerambycidae*. For not only does Osten Sacken describe his larva as having the "spiracles normal," but I see with my own eyes that its thoracic spiracle is on the side of the mesothorax. On the whole, I incline to believe that the larva of *A. pictus* is really apod, and that of *A. robinæ* really 6-footed; but as this is so remarkable an anomaly, it would be very desirable to verify the facts by further observations. Mr. Cyrus Thomas describes a larva found in locust wood, which he supposes to be that of *A. robinæ*, as having "six very minute feet." (*Trans. Ill. State Agr. Soc.* V. p. 430.)—Dec. 16, 1865.

of *Arhopalus*—the *infaustus* of LeConte, as kindly determined for me by that author himself—the ♂ and ♀ of which are as much alike as those of *robinæ*, and scarcely differ from my specimens of that species ♂ ♀, except in the yellow bands being nearly twice as wide and the antepenultimate one at the tip of the elytra nearly thrice as wide, and in the legs being brown-black instead of ferruginous. With the exception, however, of the antepenultimate one, the yellow bands of this species are no wider than in Harris's figure of *robinæ*. (*Inj. Ins.* Pl. II. 10.) Besides the above colorational characters, there is a very slight, but constant, structural character which distinguishes *infaustus* both from *pictus* and from *robinæ*. In the former ♂ ♀ the antennal joints 2 and 3 are together $\frac{1}{2}$ — $\frac{1}{3}$ shorter than joint 1; in the two latter species ♂ ♀ they are equal to joint 1. Of *infaustus* my friend Dr. Velie took in the middle of September, 1864, eight ♂ four ♀ on the Platte River in Colorado, near Baker's Ranch; and as both he and Dr. Parry, the Iowa botanist, agree that there were no trees but cottonwoods growing within a great many miles of that locality, the presumption is that that insect inhabits the cottonwood. In that case we have here a third (Phytophagic) Species belonging to this group, which agrees with *robinæ* in all the six ♂ characters that separate that species from *pictus*, (*Proc. &c.* III. p. 421,) and also in the time of the appearance of the imago; but differs ♂ ♀ as specified above from *pictus* ♂ ♀ and *robinæ* ♂ ♀, and also in its food-plant.

CALLIDIUM ANTENNATUM Newman (=violaceum Eur?) and C. IANTHINUM Lec. (Coleoptera.)

The former of these two very closely allied species lives in pine wood, according to Harris, and comes out from the middle of May to the first of June. (*Inj. Ins.* p. 100.) Of the latter, as determined by Dr. LeConte himself, Dr. Velie took ten specimens in Nebraska in the month of May in and on Red Cedar, which tree they were infesting in enormous numbers. Hence the two may be considered as Phytophagic Species. *Ianthinum* differs as follows from *antennatum* on comparison with 2 ♂ 1 ♀ of the latter received by me from the Eastern States:—

1st. The length (ten specimens) is .39—.45 inch instead of .55—.60 inch, or, according to Harris, .40—.60 inch.

2nd. The thorax is only one-third shorter than wide instead of one-half shorter.

3rd. The widest part of the thorax is a little *behind* the middle instead of a little *before* the middle.

4th. The sculpture above is, not only relatively, but absolutely coarser, especially on the thorax.

5th. On the pronotum ♂ there is no subpolished dorsal shield, bounded laterally by a distinct unidentate stria. Dr. LeConte informs me that this character is always met with in ♂ *antennatum*, and it is very conspicuous in both my ♂ ♂. I have been unable to ascertain, what are the characters which are supposed to separate our *antennatum* from the European *violaceum*, which also feeds on pine, and with which it was formerly confounded. The name seems to indicate that there is supposed to be some difference in the size or structure of the antennæ.

CONOTRACHELUS NENUPHAR Hbst. (Coleoptera.)

It has long been known that a race of this insect inhabits the Butternut and Walnut, which is full one-half longer and wider than the race which infests the Plum. I have met with numerous specimens of both, but never found any intermediate size. Say states, on the authority of Bartram, that this insect also "destroys the European Walnut in this country," but does not notice any difference in the size of the Walnut-inhabiting race. I conceive that the two are Phytophagic Varieties or perhaps Species, differing from each other as do the two races of *Chrysomela scalaris* Lec., which inhabit respectively the basswood and elm or the dogwood and plum. (*Proc. &c.* III. p. 403.)

DORYPHORA 10-LINEATA Say and D. JUNCTA Germ. (Coleoptera.)

I have already, in the "Practical Entomologist" (No. 1), shown that the former of these two very closely allied species inhabits plants belonging to the botanical family Solanaceæ, and especially the genus Solanum; while the latter most probably inhabits the Hickory, or at all events does not feed on Solanum. We may therefore consider the two as Phytophagic species.

Typically there are on the thorax of each of these species eighteen spots, arranged in the same very peculiar pattern, viz: two large, divergent, elongate ones arranged side by side in the middle, and respectively between and behind these a single minute one placed on the dorsal line; while on each side of this four-spotted pattern are seven small spots, five of them on the hinder part of the thorax in a quincunx narrowed in front, and the other two before this quincunx, scarcely wider apart than the two hind spots of the quincunx, and obliquely arranged, so that the outer one of the two is always twice as far from the anterior edge of the thorax as is the inner one. Now eighteen spots may be arranged in a given trapezium in an almost infinite variety

of different patterns. If, then, these two species did not spring from some pre-existing form, but were created originally as distinct species, how does it come about that the same very peculiar pattern is repeated on the thorax of each? What possible necessity in that case could there be, for Nature to plagiarize from herself a merely ornamental design, when millions and millions of other designs might just as well, for anything we can see to the contrary, have been selected? I could as soon believe, with the old geologists, that dead fossil shells had been created in the rocks, on purpose to deceive us into believing that they had once been alive, as that, out of the infinity of possible patterns, a particular one had here been selected and imprinted upon two aboriginally distinct species, with the manifest result of deceiving us into confounding those two species together.

I have said that there are *typically* eighteen spots on the thorax of the above two species. Sometimes, however, six particular spots out of the eighteen are some or all of them absent, the *locus* of the remaining spots being still the same; and it is very remarkable, that in the two species it is the same particular spots that are thus absent, viz: the two minute ones on the dorsal line and the central one of each quincunx, which are often absent, and the spot in each quincunx that abuts on the hind angle of the thorax, which is but seldom absent. According to the mathematical theory of chances, this can scarcely be a merely fortuitous event; for the odds are enormously against any one's happening on the same particular six numbers, twice over, out of eighteen numbers.

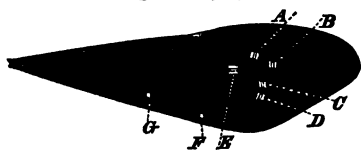
It is sometimes the case also, in both the above two species, that several pairs of the thoracic spots are confluent with each other. Now we have only to imagine all of them confluent, and we get the thoracic ornamentation found in *Chrysomela bigsbyana* Kby, *C. præcelis* Rogers, *C. elegans* Oliv. and *C. exclamationis* Fabr., viz: a dark-colored thorax bordered laterally and in front with a pale tint; and in *C. scripta* Fabr., *C. interrupta* Fabr., *C. Adonidis* Fabr., and especially in *C. multipunctata* Say, we find intermediate grades between the two forms. Nor is this an entirely imaginary idea as applied to the genus *Chrysomela*. In a series of specimens of one species of this genus, *interrupta* Fabr., as I have already observed, (*Proc. &c.* III. pp. 228-9,) we find, as regards the elytral markings, precisely the same gradations, from sixteen dark spots more or less partially confluent, to a uniform dark color bordered laterally and behind by a pale tint. Nobody doubts that these colorational varieties of the species *interrupta* have all proceeded from a common origin. Why then should we be shocked with the idea, that

the similarly different colorational forms of two such closely allied genera as *Doryphora* and *Chrysomela* have, ages and ages ago, all proceeded from a common origin?

Genus ICHNEUMON. (Hymenoptera.)

There is another and a still stronger case of what I have called the "Unity of Coloration," which, as it is a very curious one, and does not appear to have been hitherto noticed or elucidated by any author, I may be excused for dilating on. In fact, colorational characters such as these, which prevail throughout several species or throughout whole genera, are usually neglected by those entomologists who occupy themselves in establishing new genera, because the commonly received opinion is that genera must be founded, not upon colorational, but upon structural characters; and by those who occupy themselves in describing new species, because, being found indifferently in many species, they are of little or no value as specific distinctions. Yet the very circumstances, that cause them to be neglected by these two classes of writers, are precisely those which render them of pre-eminent interest to the philosophic naturalist.

The annexed figure represents—magnified about three diameters—the front wing of any species of *Ichneumon* with blackish or fuliginous



wings, e. g. *viola* Cresson, *flavicornis* Cress., *saucius* Cress., *cincticornis* Cress., *scelestus* Cress., *malacus* Say, *morulus* Say, *devinctor* Say, *centrator* Say, *grandis* Brullé, or

rufiventris Brullé. It will be observed that there are five white spots on it, *A . . . E*, which extend beyond the limits of the vein on which they are situated into a blister-like expanse, that has much the appearance of a spot of white mould. Besides these five, there are two minute spots, *F* and *G*, which scarcely ever extend beyond the limits of the vein on which they are located. The *locus* of all these spots is perfectly definite and never differs in any species. *A* is small and often subobsolete, and is invariably located on the internal side of the areolet, and so well forwards as to touch the radial area. *B* is large and obvious, and is invariably located on the external side of the areolet, and almost always slightly behind the middle of the cross-vein which it bestrides. *C* is large and obvious, and is invariably located about midway between the areolet and the obtuse, salient angle of the second recurrent nervure, which angle, as in the figure, often has a short stump of a vein proceeding from it. *D* is small and sometimes subobsolete,

and is invariably located immediately behind this salient angle so as to touch its apex. *E* is large and obvious, and is invariably located about midway between the areolet and the obtuse, re-entering angle of the first recurrent nervure, which angle, like that of the second recurrent nervure, often bears a short stump of a vein, as shown in the figure. And *F* and *G* are minute and inconspicuous, and invariably located on the hind end of the two hindmost cross-veins, so as to touch the anal or postcostal vein.

Although three of these five blister-like spots, viz: *B*, *C* and *E*, are obvious, so far as I can find out, in every N. A. species of *Ichneumon* that has blackish wings, the other two being generally smaller and not so conspicuous, and although Mr. Cresson, on my calling his attention to the subject, kindly informs me that he notices them in many European species with blackish wings, yet they have been almost entirely overlooked by authors. Say refers to them only in his description of *I. malacus*, where he calls them "bullæ," (blisters or bubbles,) and in his description of *I. morulus*, where he calls them "white dots;" Cresson refers to them only in his descriptions of *I. Blakei* and *I. scelestus*; and Brullé does not refer to them at all. As to the minute spots, *F* and *G*, though they occur, not only throughout the genus *Ichneumon*, but in every specimen of every species of every genus belonging to *Ichneumonidæ*, (and I might add *Braconidæ*.) that I have hitherto examined, yet I cannot find that any author has as yet taken any notice whatever of them.

But these five "bullæ" are not confined to those species of *Ichneumon* that have blackish wings. I discover that, by holding the wing up to the light, they may be detected, more or less plainly, in all the species of *Ichneumon*, at least seventy in number, that are contained in my collection, many of which have almost perfectly hyaline wings.*

*My collection comprises *viola* Cress. ♀ (= *maurus* Cress. = *Orpheus* Cress.), *flavicornis* Cress. ♂, *malacus* Say ♀, *saucius* Cress. ♀ (= *ater* Cress.), *cincticornis* Cress. ♂ ♀, *morulus* Say ♂ ♀, *vittifrons* Cress. ♂, *scelestus* Cress. ♀, *extrematis* (-mus?) Cress. ♂ ♀, *unifasciatus* Say ♂, *otiosus* Say ♂ ♀, *agnitus* Cress. ♀, *pulcher* Brullé ♂, *cæruleus* Cress. ♀ (= true ♀ of *pulcher*?), *jucundus* Brullé ♀, *Grotei* Cress. ♂, *flavizonatus* Cress. ♂, *atrifrons* Cress. ♀, *comptus* Say ♂, *paratus* Say (1836) ♂, *comes* Cress. ♂ ♀, *devictor* Say ♀, *fuscifrons*? Cress. ♀, *pectoralis*? Say ♂, *funestus*? Cress. ♀, *centrator* Say ♀, *suturalis* Say ♀, *seminiger* Cress. ♀ (= *vicinus* Cress.), *annulipes*? Cress. ♀ (= *pusillus* Cress.), *grandis* Brullé ♂ ♀ (♂ = *ambiguus* Cress., ♀ = *regnatricis* Cress.) and *rufigentris* Brullé ♂ ♀ (= *semicoccineus* Cress. = *incertus* Cress.) The remaining thirty-nine species are not described either by Say, Brullé or Cresson, and are probably most of them new. As regards the synonymies given in the above list, it is proper to add here, that I do not find

On the other hand, in other Ichneumonidous genera there exist homologous spots, but often different in number or differing slightly in their location, though they are manifestly modifications of the same primordial pattern. For example in *Trogus*, where the pentagonal areolet of *Ichneumon* becomes rhomboidal by the elimination of the upper side, *A* generally covers the whole angle formed above by the union of the inner and outer sides of the areolet, and the other four bullæ are placed as in *Ichneumon*. In *Pimpla* and *Ephialtes*, which also have a rhomboidal areolet, *A* is placed above *B* on the upper end of the outer side of the areolet, and in *Pimpla* is generally separated from *B* only by a very small space, and sometimes entirely confluent with it, the other three bullæ being located in both genera nearly as in *Ichneumon*, except that *E* is usually closer to the angle of the first recurrent vein. In *Cryptus* there are normally but four bullæ, *C* and *D* being confluent and the others placed as in *Ichneumon*, except that *B* is located higher up on the cross-vein which it bestrides. In *Glypta*, where the areolet is represented by a simple cross-vein, *A* and *B* are absent, but as *C* and *D* are not quite confluent, being divided by a slender black line or black dot, there are three bullæ, *C*, *D* and *E*. *Odontomerus*, *Xylonomus*, *Acænitus* and *Arotus* differ from *Glypta* chiefly in *C* and *D* being separated by a very wide space, and have the same number of bullæ. And in *Ophion* and *Anomalon*, where the areolet is also represented by a simple cross-vein, *A* and *B* are absent, but *C* and *D* being perfectly confluent, there are consequently but two bullæ. So far as I can discover, on a careful examination, there is no Ichneumonidous genus

either the shape of the "central area" of the metathorax, or the number of joints contained in the antennal annulus, a constant and reliable specific character. In very many well-marked species of which I possess numerous specimens, the width of the "central area," as compared with its length, varies 50 per cent. with all the intermediate grades, i. e. varies from "transverse" to "quadrate" or from "quadrate" to "elongate;" and in other such species the length of the antennal annulus varies very considerably, often by three or four and in one species by as much as seven joints, with numerous intermediate grades. It is even the case that in one undescribed species, allied to *parvus* Cresson, of which I possess seven ♂, a single ♂ has two or three of the intermediate antennal joints marked with yellowish-white above, while the remaining six ♂ have no such markings whatever. And Westwood records the fact that "two ♀ of *Cryptus bellosus* were reared by Mr. Thwaites, one of which had the antennæ annulated and the other entirely black." (*Intr.* II. p. 138, note.) If all specimens that differed in the above characters were considered as distinct species, the number of species in my collection would be very largely increased, and my argument strengthened so much the more.

that has not some such modification of that type of bullæ which prevails in *Ichneumon*, and none that has not at least two bullæ, viz: *C* (or *CD*) and *E*.*

Although, as I believe, the bullæ exist typically in every species of *Ichneumon* in the pattern peculiar to that genus, yet, as we might naturally expect, we occasionally in certain species meet with certain specimens, where they are partially obsolete, or undergo some other slight modification, sometimes in one wing only, sometimes in both wings of the same specimen. In order to test this question, I have carefully examined both front wings in 319 specimens belonging to the 70 species of *Ichneumon* which I possess, making in all 638 wings. Of these 638 wings as many as 75, belonging to 28 different species, have the bulla *A* obsolete; 28 wings, belonging to 15 different species, have the bulla *D* obsolete; † in one wing only of the 638, belonging to a single ♀ of *seminiger* Cress. out of 3 ♀ which I possess, is the bulla *C* obsolete; but in none whatever of the 638 are either the bulla *B* or the bulla *E* obsolete. In 5 wings out of the 638, belonging to 3 different species, where the areolet is subrhomboidal, including 1 ♂ out of 28 ♂ of *flavizonatus* Cress., the bullæ *A* and *B* are confluent above. And only in 2 wings out of the 638, viz: in 2 ♂ of *morulus* Say—a very abnormal species with metathoracic thorns ‡—out of 3 ♂ 2 ♀, is there a small additional or spurious bulla located on the side of the areolet that adjoins the discoidal cell, but only on the inside of the areolet and not extending on to the vein. In 11 out of 13 specimens of *Trogus obsidianator* Brullé which I possess, this same additional spurious bulla or rather semi-bulla makes its appearance. But neither in the three other

* Say describes the "bullæ" by that name in *Anomalon attractus*, *An. (Odontomerus) mellipes*, *Ophion brachiator* and *Cryptus grillator*; and describes them as "white spots" in *Banchus æquatus* and *B. nervulus*. Of course, if he had been aware that these bullæ are, properly speaking, a generic character common to all the species of the same genus, he would not have given them as characters of particular species. Brullé neither names nor describes the bullæ in any of his descriptions of *Ichneumonidæ*, though his Artist has figured them *Plate XLII*, fig. 1. And Mr. Cresson tells me that "neither Fabricius nor Gravenhorst, so far as he can see, mentions the bullæ or any other term for that character."

† In several small species with hyaline wings, which I have referred to this category, the second recurrent vein is so nearly straight, that it is difficult to say, whether it is the bulla *D* that is obsolete or the bullæ *C* and *D* that are confluent.

‡ If *Hoplismenus* Grv. can be retained as distinct from *Cryptus*, which Brullé denies, then this species should also be erected into a genus distinct from *Ichneumon*.

species of *Trogus* in my collection, including *T. exesorius* Brullé, nor in any other Ichneumonidous species, so far as I have observed, except *Cryptus robustus* Cress. six ♀, and an apparently undescribed species (one ♂ one ♀) belonging to a new genus intermediate between *Joppa* and *Baryceros*, do I find any traces of this remarkable anomaly. The above is the sum total of variation, as regards these "bullæ," in 638 wings appertaining to 70 distinct species of *Ichneumon*; and it appears to be almost universally variation and not specific difference, because there is but a single instance where a species, represented by over two specimens, exhibits any given variation in both the front wings of all the specimens. That instance is *annulipes*? Cress., a very variable species, of which I possess eight specimens, no two of them exactly alike in their general coloration, and all eight of which have the bulla obsolete in both wings. In 319 specimens of any given species of insect, we should be apt to find almost as great an amount of variation, as that which has been detailed above, in any given specific colorational character. And yet this particular type of bullæ is not a specific character, but one which runs through 70 distinct species of a particular genus; and as already stated, remarkable modifications of the normal bullæ of *Ichneumon* are found in all the other Ichneumonidous genera with which I am acquainted.

Besides the seven spots which, as has been already shown, exist typically in the front wing of *Ichneumonidæ*, there are usually in the hind wing two bullæ located on the lower or hindmost end of the two principal cross-veins. But for the purpose which I have in view, it is unnecessary to dwell upon this point.

I might have insisted likewise on the very general, though not universal, persistence of the pale spot at the base of the stigma throughout *Ichneumonidæ* and *Braconidæ*, and several other Hymenopterous families; and, indeed, throughout certain families belonging to other Orders. But as this character is perhaps partly structural, being connected with the thinner organization of the stigma at that particular point, for certain unknown structural or functional purposes, I have forborne taking any account of it. In the case of the bullæ, however, we cannot reasonably assume, that any structural or functional necessity could require a wing-vein to become suddenly thinner at some particular point, and then as suddenly become as thick as before; for it has been proved that the wing-veins are, properly speaking, veins, *i. e.* that they are fluid-conducting tubes. And even if we make some such gratuitous assumption, this will not explain the white blotch on the membrane of

the wing, which almost always in the bullæ *A . . . E*, but scarcely ever in the spots *F* and *G*, adjoins the white spot on the vein itself.*

To entomologists who have worked much on any particular group or groups of insects, the facts stated above will, I suspect, seem not at all extraordinary. For many similar cases of Colorational Unity occur in every Order; and it has repeatedly happened to myself, and I doubt not to others, that, after having examined numerous species belonging to a given genus, I come at last upon one with a particular spot or a particular stripe conspicuously developed in a particular *locus*, and, on recurring to the species already examined, find more or less faint traces of the same spot or the same stripe in every one of them. But to the student in other departments of Natural History, where the number of species is so very much smaller than in Insects, and where consequently there is no such opportunity to form very extensive generalizations, the phenomena detailed above will appear, perhaps astonishing, perhaps incredible, perhaps false. They are nevertheless strictly true; and any one may easily satisfy himself of their truth, by selecting at random any species of *Ichneumon* and holding up its wings to the light under a moderately good lens.

The question naturally occurs here to the philosophic mind—What is the MEANING of all these facts? Why do the same bullæ in the same *loci* occur in so many distinct species of the same genus? Why do not some species have these bullæ located on some of their other veins, or on some other part of the same vein? Why, for example, is there never a bulla on the *basal* side of the angle of the first recurrent vein, either in *Ichneumon* or in any other Ichneumonidous genus? Why are there not sometimes six or eight or ten bullæ? Why are there not sometimes none at all? In every species of *Ichneumon* we find, it is true, without exception, a pentagonal or subpentagonal areolet and a very short ovipositor. But the reason of this is obvious. If the insect was without these characters, it would not be placed in the genus *Ichneumon*, because these are some of the established generic characters of *Ichneumon*. Yet so far is it from being the case, that the bullæ are an established generic character of *Ichneumon*, that they do not appear to have been even noticed hitherto, except incidentally in the descriptions of a few species. Look at the figure given above. Anyone can see that the seven white spots on it might be arranged on the wing in millions and millions of different patterns. Why then in

* I observe that in *Thyreodon* and *Ophion* the spots *F* and *G* often extend on to the membrane of the wing, precisely as in bullæ *A . . . E*.

seventy distinct species of the same genus are they always arranged in the same pattern, subject only to the very slight variations noticed above? Why—as is most likely the case—should Nature have servilely repeated the same monotonous Colorational Pattern throughout the whole genus *Ichneumon*, which probably comprises at least 500 species, and is numerously represented on both sides the Atlantic? Why in allied genera do we find curious modifications of the same fundamental pattern, and not entirely new and original patterns? Why in allied genera do we find none entirely without bullæ, and none without the spots *F* and *G*? Why is the *locus* of the spots *F* and *G* absolutely invariable throughout *Ichneumonidæ* and *Braconidæ*? If these seven spots could answer any possible utilitarian purpose, we might say that they occur throughout *Ichneumon*, because the peculiar habits of that genus require them for that purpose. But they are manifestly mere ornamental designs, in no possible respect necessary or useful to the individual *Ichneumon*, any more than the numerous small, pale spots on the bodies of many adult Fallow Deer, which occur also in the fawn of the common North American Deer, are necessary or useful to the individual Deer.

To my mind, there can be but one satisfactory answer to all the above questions. There **MUST** be a close genetic connection between all the species of the genus *Ichneumon*, and a more remote genetic connection between that genus and the other genera of *Ichneumonidæ*. "Community of descent," says Darwin as interpreted by Lyell, "is the hidden bond which naturalists have been unconsciously seeking, while they often imagined that they were looking for some unknown Plan of Creation." (*Antiq. Man.* p. 412, Amer. ed.) Let him, who refuses to accept this solution of the enigma, offer a better solution himself.

——— *Siquid novisti rectius istis,
Candidus imperti; si non, his utere mecum.*

But do not let him utter sonorous common-places, about carrying out the Plan of Creation and completing the System of Nature, and then fancy that he has explained facts, when in reality he has only re-stated them in general terms.

ROCK ISLAND, ILLINOIS, NOV. 15, 1865.

POSTSCRIPT.

It is singular how few N. A. Naturalists seem to be able to quote Darwin correctly. In the *Proceedings* (Vol. V. pp. 26-27) Mr. Scudder discourses on Darwinism as follows:—

It has been asserted that species existing over a wide range of country are more variable than those limited to a smaller area, and some arguments have been based upon this and similar assertions by those who would maintain the derivative theory of the Origin of Species. On this assumption * * * we should expect to find, &c., &c., &c. In point of fact, almost the exact opposite appears to be true, &c., &c., &c.

Now what does Darwin really assert? These are his words:—

Alph. DeCandolle and others have shown, that plants which have very wide ranges generally present varieties. * * * But my tables further show * * * that it is the most flourishing, or, as they may be called, the dominant species—those which range widely over the world, are the most diffused in their own country, and are the most numerous in individuals—which oftenest produce well marked varieties. (*Orig. Spec.* p. 54, Amer. ed.)

Other writers belonging to the same school take precisely the same ground. For example, Mr. Wallace, in his recent admirable Paper on the *Malayan Papilionidæ*, writes as follows:—

I find, as a general rule, that the constancy of species is in an inverse ratio to their range. Those which are confined to one or two islands are generally very constant. When they extend to many islands, considerable variability appears; and when they have an extensive range over a large part of the Archipelago, the amount of unstable variation is very large. (*Trans. Linn. Soc.* xxv. p. 4.)

Substitute in Mr. Scudder's sentence "generally more variable" or "oftener variable" for "more variable," as in common fairness ought to have been done, and the few facts quoted by him in the genus *Chionobas* in no wise controvert what Darwin really asserts. Leave the sentence as it stands, and assume the facts to be as Mr. Scudder puts them—on which point I do not pretend to offer any opinion—and the argument appears to be a triumphant refutation of the so-called Darwinian statement. When Darwin is misquoted, the reasoning seems good; when he is quoted correctly, it is good for nothing. A theory must be strong indeed, when, as would seem from the practice of certain Naturalists, it can only be refuted by misstating it.

Descriptions of some new species of DANAINÆ.

BY TRYON REAKIRT.

1. *Itomia Sosunga*, n. sp.

Male.—Fore wings almost as in *I. Gonussa* Hewits., but the transparent yellow patch within the cell is double what exists in that species. Hind wings transparent, brownish; a large clear yellow space on the basal half of the abdominal margin, extending but slightly into the cell, and over the second median vein, much more circumscribed in its area than the similarly situated but differently colored spot in *I. Gonussa*, reaching, in no direction, as far as this; a marginal row of five rounded and oblong white spots, smaller than in the allied species.

Under surface mostly as above, with a bright ferruginous costal band running half way down the anterior margin of the posterior wings. Expanse 2.75 inches.

Antennæ entirely black.

Thorax and abdomen black, the first spotted with white in the usual manner, the last with a double ventral white line, coalescing at the insertion into the thorax, and at the anus.

Hab.—Honduras. (In my Collection.)

This fine species, in conjunction with *I. Gonussa*, might perhaps be more appropriately placed under *Hymenitis*, to the less extreme species of which they very closely assimilate. Mr. Bates, in his invaluable work upon the Amazonian *Heliconidæ*, gives a list of ten species, (p. 538) which he considers as belonging to this genus, but does not include among them this species, which, at the date of his publication, was both figured and described. I have, therefore, relying upon his better judgment, necessarily arising from much greater facilities of comparison, treated of the new and related species under the same head.

In the general disposition of its markings, it is so nearly allied to *Gonussa*, that it might by some Entomologists be considered as its *male*; but recollecting that amidst the crowd of delicate forms referable to this genus, we know of but one instance (*nise*.) in which the sexual disparity is strikingly observable, I have thought it best to treat it as a new type. A great many new species have been indicated by Dr. Herrich-Schæffer in his "Lepidopterorum index systematicus," Corbl. p. 175, 1864, a large majority of which have neither been delineated nor diagnosed; until this has been accomplished, they can in no way conflict with identical species that may be described under other names.

2. *Ceratinia Lycaste*, Fabr. sp.

Pap. Lycaste, Fabr., Ent. Syst. III. i. p. 161, n. 497. (1775.)

Jones, Icon. II. t. 7, f. 1. (ined.)

Hel. Lyc., Godart, Enc. M. IX. p. 221, n. 54. (1819.)

Hel.? Lyc., Diurnal Lepidopt. I. p. 104, n. 50. (1847.)

Melinaea? Lyc., Cat. Brit. Mus. VIII. p. 56. (1844.)

Ceratinia Iphianassa, Cat. Brit. Mus. VIII. p. 149. (1844.)

Ithomia (Ceratinia) Iph., Diurnal Lepidopt. I. p. 127, n. 71, t. 18, f. 3. (1847.)

Ith. Iph., Hewitson, *Ithomia*, f. 91, 92, 93. (1855.)

Ith. Iph., var. *panamensis* Bates, Proc. Zool. Soc. p. 245, t. 29, f. 5. (1863.)

Ith. Phanessa, Herrich-Schäffer, Hewitson, *Ithomia*, f. 93. (1864.)

Ith. Anaphissa, " " " f. 91. (1864.)

This is one of those protean species which overturn all the preconceived ideas of Entomologists regarding specific stability of form.

In the early part of this year, amongst other Lepidoptera, I received two examples of this species from Los Angeles, California, where they had been taken by my friend, Mr. John C. Love, formerly of this city. One of these I at once determined from Godart's meagre diagnosis, to be Fabricius' *Lycaste*. The other approximated so closely to a variety of *Iphianassa*, then not long described and figured by Mr. Bates, and yet was so nearly assimilated to the typical *Lycaste* as to cause me much uncertainty in regard to the identity of both. In this strait I forwarded their descriptions to Mr. H. W. Bates, and soon after received an answer, from which I extract the following:—"Your *Heli-conia* from Los Angeles is no doubt *Ithomia Iphianassa*, local var. *Panamensis* mihi . . . since naming the insect, I had myself found it to agree with Godart's *Lycaste* . . . I suppose the name *Iphianassa* must now give way to that of *Lycaste* . . . its occurrence so far north as Los Angeles is a new and most unexpected fact."

A careful examination of a series of eight successive and progressive forms, five of which I have in my own cabinet, finally determined me to concentrate these varieties under one specific head, treating the aberrations as local, imperfectly segregated races.

One peculiarity will be observed in this variation, and which has never fallen under my notice as occurring in any other species, that, with but few exceptions, the wings appear suffused with black in proportion to their recedence from the Equatorial line.

This will be readily perceived from the following diagnosis of each form, which I have thought it desirable to append, both as illustrating the formation of species, and for the better determination of other varieties, which the future will undoubtedly disclose to us.

Ceratinia Lycaste, Fabr. sp. Type.

Male.—Fore wings, with the basal third, dark orange-tawny; beyond this, a broad yellow band, obliquely traversing the disc, and narrowing towards the inner angle, which, however, it does not reach; a large rounded black spot occupies the middle of the cell, half being superimposed upon either color; the costa is black throughout its entire length; the outer half of the wing black, with three very small white submarginal spots; three indistinct brownish streaks between these and the yellow band.

Hind wings, with the basal half, dark orange-tawny; the posterior portion black, this covering an area contained between a nearly straight line, drawn from the middle of the costa to a point on the anal margin, opposite half the length of the abdomen, and the outer margin.

Underneath the primaries differ only in having the submarginal white spots increased to the number of seven.

The secondaries differ from the upper side in having a row of submarginal spots to the same number as the primaries, and also in the presence of a large oval black spot above the cell, concealing a thick oval corneous plate, and which is contained within a sudden expansion and re-approximation of the costal and subcostal vein, along which runs a narrow black line from the base to the black margin. This plate on the upper surface is depressed below the level and filled with closely appressed scales of peculiar form, which are covered by the overlying sexual tuft of hairs. Expanse 1.81 inches.

Hab.—Los Angeles, Cal'a. (In my Collection.)

Guiana; South America. (Coll. Brit. Mus.)

— var. *panamensis*, Bates.

“♀. Wings opaque; fore wing above with the basal third orange-tawny, which color is prolonged a short distance along the costal and hind margins, the costal edge being black, and the centre of the cell ornamented with a large rounded black spot; this is followed by a broad oblique yellow belt, commencing at the subcostal nervure, and narrowing to its termination near the hind angle. Apical portion of the wing beyond the cell black, crossed in the middle by a row of three widely distant yellow spots. Beneath, the same, except that there is a row of seven submarginal white spots.

Hind wings above with the basal half orange-tawny, the outer half black, the black portion contracted near the apex, which has a row of three minute whitish spots. Beneath, the same, except that there is a yellow spot at the root of the wing, a black spot at the end of the cell,

and a row of white submarginal spots. Antennæ orange, basal portion blackish. Thorax yellowish, with two white dorsal lines; collar orange. Abdomen dark brown. Expanse 2" 2'''."—*Bates*.

Hab.—"Panama." Salvin & Godman.

In this form the central black dot of the primaries is surrounded by orange-tawny—in the type, and in the following semi-species it is placed half upon each.

— var. *negrèta*, m.

Male.—This, in addition to the difference in the situation of the black spot of the fore wings, mentioned above, has a large black dot at the termination of the hind wings' cell, and is deprived of the three submarginal white spots upon the same, that are found in var. *panamensis*. The under surface is similar to the upper, with the addition of the black line running along the costal and postcostal veins, as in the type, here, however, much widened, and connected with the spot at the end of cell by a short bar. Expanse 2.25 inches.

The oval black corneous patch is also present, as it is throughout all the ♂ forms of the species.

Hab.—Los Angeles, California. (In my collection.)

— var. *anaphissa*, Herrich-Schæffer.

Iphianassa, var. Hewitson, Ithomia, XV. f. 91. (1855.)

Differs from the usual form of *Iphianassa* only in the quantity of black with which the wings are suffused.

The black spots of the primaries are much enlarged, and the "curved line of orange near the outer margin" is obsolete.

The ground color of the secondaries is orange; the broad stripe of this color traversing the black hind margin in var. *Iphianassa* Doubld. is nearly obliterated; an oblong semi-transparent yellowish-white spot between the black spot at the extremity of the cell and the black outer margin.

Hab.—"New Granada." Hewitson.

— var. *pumensis*, m.

Male.—Differs from the following and most abundant variety of the species in having the black spots considerably enlarged, and, with the exception of the apical yellow band, in being of a uniform tawny-orange; the "oblong transparent spot between the second and third median nervules" is reduced to a mere dot.

The secondaries present a row of three apical, small, rounded, white spots upon the black margin. Expanse 2.35 inches.

Female, similar to the *male*.

Hab.—Caraccas. (In my Collection.)

The less quantity of black upon the wings of this form has led me to place it intermediate between var. *Anaphissa* and var. *Iphianassa*, although its tawny-orange tint connects it very closely with the first three varieties.

— var. *Iphianassa* Dbld. et Hewits.

Diurnal Lepidoptera, I. t. 18, f. 3. (1847.)

Hewitson, Ithomia, XV. f. 92. (1855.)

“UPPER SIDE. Male.—Anterior wing, from the base to beyond the middle (except the margins and two black spots, one of which crosses the end of the cell), semi-transparent rufous. The rest black, crossed before the apex by a curved band of yellow, and an oblong transparent spot between the second and third median nervules. A curved line of orange near the outer margin, and two or three white spots at the apex. Posterior wing with the basal half transparent rufous white, with a small black spot at the end of the cell. The rest black, traversed by a band of orange, parallel to the outer margin.

UNDER SIDE as above, except that both wings have a submarginal row of white spots. The female does not differ. Expanse $2\frac{3}{8}$ in.

Hab.—Venezuela.”—Hewitson.

Caraccas. (In my Collection.)

The figure in the “Genera” represents a much more brightly colored insect than does that of Mr. Hewitson’s plate; I am unable to say whether this difference exists in fact.

— var. *Phanessa*, Herrich-Schæffer.

Iphianassa var. Hewitson, Ithomia, XV. f. 93. (1855.)

Differs chiefly from the preceding in the diminution of the extent of black surface, particularly noticeable upon the primaries. “The oblong transparent spot between the second and third median nervules” is much enlarged, and occupies all the area within those limits between the cell and the margin; the “curved line of orange” extends but a short distance along the outer margin; the black spot in the cell is lessened, and a small black triangle in the angle formed by the median vein and first branch, is wanting. The black spot at the extremity of the cell of the secondaries is obsolete upon the upper surface, and the black margin is more rounded interiorly at the apex, not so contracted as heretofore. The rufous tint is more diluted, and the diaphaneity of the wings more conspicuous than in any of the preceding forms.

Hab.—“New Granada.” Hewitson.

— var. *Chimborazana*, m.

Female.—Fore wings transparent; some opaque tawny-orange scales beyond the subcostal vein, and on the inner margin below the median

vein and first branch, in neither place reaching farther than the cell; a black apical patch and outer margin as in the normal form, a submarginal row of white spots, becoming indistinct towards the inner angle, where there is also a faint trace of the orange line. Two transverse black bands, both much dilated superiorly, extend from the costa to the outer margin; the upper, commencing directly upon the costa, covers the disco-cellular nervules, and third median veinlet, narrowing almost to the width of this in its lower portion; the two radials which are black and somewhat dilated, divide the space enclosed between the band and the black margin into three oblong spots, the upper having a small opaque white spot impinging upon the costa; the lower black band arises about the middle of the cell from the subcostal nervure, along and below which a tapered prolongation runs to the base, and terminates on the outer margin just above the anal angle, nearly following the line of the medio central veinlet; below the cell this band is of nearly uniform breadth.

The hind wings appear to be colored as in var. *Phanessa*, but the central portion is entirely transparent.

The single example I possess is somewhat rubbed, for which due allowance must be given to the description.

Hab.—Ecuador. (In my Collection.)

For a specimen of this very interesting variety, ticketed "Valleys, west side of Chimborazo," I am indebted to Mr. H. W. Bates.

To the best of my knowledge, I have given the diagnoses of all known forms referable to this species, which, with some others, *Salapia*, *Terra*, *Avella*, *Diasia*, &c., are, I think, entitled to generic distinction. The corneous plate on the under side of the hind wings of the male is a very decided diagnostic, sufficient to separate them not only from the remaining members of *Ceratinia*, but also from all the species contained in that most incongruous genus of the "Genera"—*Ithomia*. For the species named, and three or four more, I would indicate the generic name *Dynothea*.

3. *Ceratinia Daeta*, Boisd. sp.

♂ *Heliconia Daeta*, Boisd. Sp. Gen. t. 11, f. 7. (1836.)

Ithomia (Ceratinia) Daeta, Diurnal Lepidoptera, I. p. 127, n. 77. (1847.)

♀ *Mechanitis Melpis*, Hübn. Zut. f. 687, 688. (1832.)

Ithomia Anyta, Dbld. Diurnal Lepidoptera, I. p. 127, n. 75. (1847.)

Mechanitis Melpis, var. Hübn. Zut. f. 759, 760. (1832.)

Ithomia Laphria, Dbld. Diurnal Lepidoptera, I. p. 127, n. 76. (1832.)

Ithomia Euryanassa, Felder. W. E. M. IV. p. 101. (1860.)

Hab.—Caraccas (*Dæta*), Rio de Janeiro (*Laphria* and *Euryanassa*). (In my Collection.)

I can see no reason for separating any of these synonymic forms. Dr. Herrich-Schæffer has, indeed, united *Anyta* and *Dæta*, and very curiously given the former name the preference. There is no perceptible difference either in color or venation between my specimens of *Daeta* (type) and of *Euryanassa*, both of which I have very carefully determined by comparison with figures and diagnosis. *Laphria* is the only form which could, by undue straining, be considered even a variety, and the departure is so very trifling that it hardly merits this slight distinction.

4. *Mechanitis Californica*, n. sp.

Expanse 2.45—2.56 inches. Fore wing above, brownish-black, a basal streak over the median nervure, and two rounded spots near the inner angle, orange-tawny; of these the outer is the largest, sometimes the inner is yellow, and sometimes both are nearly obsolete—a spot across the cell near its termination much narrower than in *M. Isthmia*, and in one example, (B) reduced to a mere dot on the median nervure, a more or less interrupted belt across the wing from the costa to near the middle of the outer margin, and an oblong subapical spot, yellow; in specimen B, just mentioned, there is an additional yellow spot below the medio-central veinlet.

Beneath the same, suffused with orange-tawny at the base, and the inner angle, with a row of eight or nine submarginal white spots along the outer margin.

Hind wing above, orange tawny, with a broad mesial band, entire, and a narrow outer border, from the middle of the costa to the anal angle, brownish-black.

Beneath the same, a yellow spot on the root of the wing; a band runs along the subcostal nervure from the base to the margin, where it is somewhat dilated; immediately below its termination, a mark in the form of an irregular figure 2, usually with the upper part inordinately enlarged; between this and the base, on the central line of the band above, three small subtriangular spots; all these markings blackish-brown; a submarginal row of seven white spots on the outer margin.

Body brownish; wing lappets and thorax spotted with tawny-orange; antennæ yellowish, with the base dusky.

Hab.—Los Angeles, California. (In my Collection.)

This beautiful species is closely allied to *Mechanitis Isthmia* Bates, both being local segregations of the protean *M. Polymnia*, to which, however, *Californica* species is more nearly allied.

Descriptions of some new species of *ERESIA*.

BY TRYON REAKIRT.

1. *Eresia Yorita*, nov. sp.

Male.—Upper side, brownish-black. Fore wing, with a single spot in the cell, a large spot below it cut by the first median nervule, a quadripartite band from the costal margin beyond the middle, the division upon the costa bisected by a narrow black vein, and a small rectangular spot near the middle of the exterior margin.

Hind wing crossed between the middle and the base by a broad band, divided by black nervules into seven spots; all the markings on the upper surface pale rufous white. Fringe white, cut with black.

Under side more brownish than above; the pale markings of above repeated and enlarged, base and one-third the costa of the primaries and base of the secondaries, bright ferruginous; two sub-basal spots and an oblong streak, rufous white, transversely across the latter, also a sub-marginal row of oblong spots of the same color. Expanse 1.88 inches.

Antennæ black; thorax and abdomen above black; head and thorax underneath spotted with yellowish-white.

Hab.—Honduras. (In my Collection.)

Very closely allied to *E. Ezra* Hewitson, but differs in the much greater elongation of the wings, the body remaining of the same size. It lacks a rufous-white spot in each cell, there being but *one* in the fore wing's cell, and none in that of the hind; and also the ferruginous dot near the anal angle; the transverse band in *Ezra* is centrally situated, in *Yorita* it is thrown much before the middle, its outer margin tracing a mesial line.

Mr. Hewitson does not mention any basal ferruginous markings in *Ezra*, and which are so eminently characteristic of *Yorita*.

2. *Eresia Comaels*, nov. sp.

Male.—Upper side black, marked with pale fulvous; a large patch on the inner margin beyond the middle, and obliquely above it two smaller, respectively approaching the outer third of the costa and the middle of the exterior margin.

A transverse band across the secondaries, very wide upon the costa, and narrowing toward the abdominal margin; following this, a row of indistinct submarginal lunules; emarginations yellowish-white. Expanse 1.38 inches.

Under side, primaries fulvous towards the base, beyond, two large orange spots, separated by a sinuate black band, running from the

costa nearly to the inner angle; apical area greyish-brown, with some small white lunulate spots on the costa, and two larger, near the middle of the outer margin.

Secondaries greyish; at the base reticulated with delicate reddish-brown lines; a pale rufous yellow transverse band; outer margin clouded with rufous-brown, enclosing a series of pale submarginal lunules, and interior to these three or four rounded brown spots.

Female does not differ.

Hab.—Brazil. (In my Collection.)

In ornamentation, *Comaela* must be very near to *Teletusa* Godart, as a variety of which I have long considered it, (a typical example of this I have never seen) but as in outline, it exactly agrees with *Dicoma* Hewitson, I have considered it as new, for Mr. Hewitson says, this, (*Dicoma*) "is near *Teletusa* on the upper side, but of different form."

3. *Eresia Geniguesh*, nov. sp.

Male.—Upper side brownish-black, marked with white, or pale yellowish-white spots, arranged on the primaries as follows: an abbreviated sub-costal band of three spots, obliquely below and exterior to these two more, and then a single submarginal one completes the interrupted maculate band, running from the costa to the middle of the exterior margin; below the median vein another short row of three spots, and at an equal distance on each side of the lowest of these, which is much compressed, a rounded spot near the inner margin; a narrow transverse streak in the cell.

The secondaries present a dash in the cell; a central transverse band, divided by the dark veins, and posterior to this, two indistinct rows of lunules.

Under side, primaries grayish-yellow on the basal half, outer portion brownish; the spot within the cell is considerably dilated, and there are traces of another spot interior to this; the submarginal spot on the outer margin is very much enlarged, extending to the outer margin, and becoming pale fulvous; there is an obsolete row of connected lunules, the two nearest the apex black, and on the costa between these and the abbreviated band, a small yellowish-white point; the rest of the white markings as on the upper surface.

Secondaries uniformly greyish-yellow, faintly reticulated with darker lines at the base; a submarginal row of white lunules, obsolete at the apex, and above the two central of these, two well defined small brown crescents. Expanse 1.38 inches.

Hab.—Los Angeles, Cal'a. (In my Collection.)

Perhaps this may be identical with *E. Hermas* Hewitson, but as he has not figured the upper side, and described it very vaguely, it is comparatively impossible to determine anything from his diagnosis. It is only, however, in the outline of the marking that it seems to resemble that species. Their difference in color, and some variations upon the fore wings, have induced me to consider it specifically distinct.

Eresia Smerdis Hewits. must give place to *E. (Melitæa) Texana* Edwards, Mr. Edwards having described it in July, 1863; the former, in April, 1864. *E. Gyges*, of the same author, is a synonym of *E. Frisia* Poey, the two being precisely similar.

4. *Eresia Batesii*, nov. sp.

Male.—Fore wings black; two transverse, maculate, fulvous bands, arising nearly at the costa, and converging to the inner margin; the cell contains three or four abbreviated bars, none of them extending below the median vein; the basal half of the area below this nervure is deep black, rarely containing a narrow fulvous streak; a spot of the same color opposite the middle of the outer margin.

Secondaries black; the two fulvous bands of the fore wings are continued nearly to anal margin, the separating line very much attenuated in the middle; the posterior contains a rounded black spot between each nervule, and beyond these an indistinct row of connected lunules; two fulvous spots within the cell, preceding the first transverse band, the inner semi-encircled by the outer. Fringe white, or whitish, sometimes lightly cut with black at the extremities of the veins. Exp. 1.25—1.50 inch.

Under side of the primaries fulvous; a large triangular black patch arising from the middle of the inner margin is connected at its apex with an irregular, dilating bar running thence to the middle of the costa; a short bar on the costa between this and the apex; three connected black lunules, the central much the widest, run from beyond the middle of the inner margin to the third median vein; sometimes this line is prolonged by the addition of one or two more very delicate crescents.

Secondaries ochrey-yellow; indistinct pale fulvous lines near the base, and a row of rounded dots, followed by pale lunules of the same color near the outer margin; rarely, one of these last is bright ferruginous.

Body, &c., as in the allied species.

Female, similar on the upper surface; underneath the reticulations are plainer. Expanse 1.63 inches.

Hab.—Winchester, Va.; Gloucester, N. J. (In my Collection.)

I take pleasure in dedicating this species to my friend, Mr. H. W. Bates, of London.

Its only Eastern ally is *Tharos*, but it is much more nearly related to *Pulchella* Boisd. (*Pratensis* Behr.) of the west coast, for specimens of which I am indebted to Mr. P. R. Uhler.

The almost uniform saturation with black below the median vein of the fore wing, coupled with the white fringe, are very decided diagnostics, and alone sufficient to separate it from any of the allied species.

NOTES ON THE BOMBYCIDÆ OF CUBA.

BY AUGUSTUS R. GROTE,

Curator of Entomology, Buffalo Society of Natural Sciences.

When we separate from this Family the Zygenid genera, *Melançroia*, *Ctenuchidia*,* etc., which have been referred to the Bombycid Sub-Family *Lithosiinæ*, by Mr. Walker, we can perceive that its representation in Cuba, judging from the present collection of Prof. Poey, is extremely meagre. It abounds in species which appear to be representative, showing that we must consider the Island as a Province of the Faunal District which embraces the West Indian Archipelago. The species are wanting in striking forms, and, compared with the members of this Family in the United States, are also wanting in interest and beauty. Of certain sub-families, no representatives occur. The *Ceratocampulæ*, *Attaci*,† *Platypterycidæ*, and *Cochlidæ*, are

**Ctenuchidia*, mihi, n. g. Type, *Ctenucha virgo*, H. S., Exot. fig. 301.

Differs from *Ctenucha virginica* and *Ctenucha cressonana*, by the very slender labial palpi, which are not depressed at their tips nor flexuous, but held somewhat rigidly. Maxillæ short. Occiput and epicranium longer than usual, as broad as the elongate, advanced prothoracic parts, which receive them with but a slight apparent contraction. Thorax, slender and, with the caputal and prothoracic parts, very finely, evenly and shortly scaled. Nervules of the primaries short; costa at apical third not so depressed as in *Ctenucha*; fourth m. nervule farther removed towards the base of the wing; third, arcuate. The structural caputal and thoracic characters are distinctive, and separate it from allied West Indian genera. *Ctenuchidia virgo* is finely maculate beneath. The existence of this genus, as distinct from *Ctenucha*, has been supposed by Dr. A. S. Packard, Jr. The Zygenidæ should precede the Bombycidæ in a natural arrangement. A paper on the Cuban representatives of the Family, is in course of preparation.

†The genus *Samia*, belonging to this sub-family, was erected by Hübner in 1816. Under it are grouped in the "Verzeichniss," three species, as I regard them the types of so many distinct genera, which do not seem to have been properly separated. The first species seems properly to be regarded as the type of the genus *Samia*, as now amended. This is the *Bombyx cynthia* Drury, from Asia. The second species, *Phalæna (Attacus) cecropia*, of Linnæus, is properly the type of an American genus for which I have elsewhere proposed to use Duncan's generic term, *Hyalophora*. It becoming evident to me that the use of this term is liable to objection, for the reason that it is not properly restricted by its

totally unrepresented, while the s. f. *Ptilodontes* is very limited in extent, though, as I consider, varied in expression. The *Arctiulæ* are

author, and that it has been loosely used for a variety of species, I am constrained to propose a new name for it. The third species, *Phalæna* (*Attacus*) *Promethea* Drury, has been made the type of the genera *Callosamia* by Dr. Packard, and is established under that name, which is well selected in the view that it possesses close affinities with *Samia cynthia*.

SAMIA, Hübner.

Type: *Phalæna* (*Attacus*) *Cynthia*, Drury, Ill. Exot. Ins. Vol. 2, p. 10, Plate 6, fig. 2. (1773.)

The head is large and prominent, well advanced before the prothoracic parts. The labial palpi are sufficiently prominent, advanced as far as the wide clypeus, which is thickly covered with short hair. The antennæ are moderate; bi-pectinate in both sexes to their tips, glabrous, testaceous. The pectinations are but little shorter in the female than in the male, clothed with fine and very short cilæ in both sexes. Wings ample; primaries falcate, more than twice as long as the body. Nervules short; first s. c. at base approximate to second, the latter arcuate at base and throwing off the third s. c. at one-third of its length, the latter nearly straight, very slightly inversely arcuate. First median nervule prominently arcuate; second median straight, the interspace wide. Discal space large. Subcostal nervure basally straight. Secondaries long, ovate, their internal margin more than twice as long as the abdomen; costal margin short; external margin long and oblique, very slightly rounded.

The immature stages of *Samia Cynthia* afford good distinctional characters when compared with those of *Platysamia*; these nearly ally the genus to *Callosamia*. The cocoon resembles that of *Callosamia* in shape, though of a softer and looser texture. In making it, the larva fixes it incompletely to the branch above by an extension, wrapping a leaf around the cocoon itself, in both of these actions recalling the habit of *Callosamia promethea*.

The genus *Attacus*, Linn., should be restricted to *A. Atlas* and certain more recently described species under the genus, such apparently as *Attacus Hopfferi* Felder.

S. Cynthia has, I believe, been taken in the vicinity of Philadelphia, under circumstances which warrant a belief in the possibility of its acclimatization with us.

PLATYSAMIA, nov. gen.

The clypeus, which is narrower than in *Samia*, and broader than in *Callosamia*, is clothed with longer hair, which depends downward, hiding the very small labial palpi, still further hidden by an inferior long tuft of hair. Maxillæ wanting. Head small and sunken in the prothoracic parts. The antennæ are long and strongly bi-pectinate. In the male the pectinations are full twice as long as in the female, and densely ciliated. Mesothorax broad and stout, longly and loosely haired. Abdomen stout, and heavier and longer than in *Samia*. Wings broad and ample; primaries hardly falcate, since there is a very slight depression in the external margin at the extremity of the third s. c. nervule. Nervules long and arcuate; third s. c. arcuate, (thus opposed to *Samia*) so also the second median nervule. Discal space centrally narrower than in *Samia*; sub-costal nervure bent downwardly at base. Secondaries broad and ample; external margin rounded; anal angle less prominent than in either *Samia* or

most numerous in species, though the typical genus *Arctia*, is wanting. *Spilosoma* has a representative species in *S. jussiae*, the specific characters of which are, however, extremely slight when compared with our Northern *S. virginica*, and comparisons between a greater number of

Callosamia. The neuration of the secondaries affords distinction differences compared with *Samia*, particularly in the course of the median nervules which are more bent.

The species are:

Platysamia cecropia.

Phalæna (Attacus) cecropia, Linn., Syst. Nat. (1766) etc.

Coll. Ent. Soc. Philad.

Platysamia columbia, Smith.

Samia columbia, Smith, Proc. Bost. Soc. N. H. Vol. IX, p. 343. (March, 1865.)

Coll. Mrs. S. W. Bridgham, New York.

Platysamia californica, n. s.

♂ and ♀. Smaller than *P. cecropia*. Primaries reddish-brown, shaded subterminally with a brighter, plum-colored tinge, with no grey-shades whatever. A broad, basal, white, arcuated band, running from internal margin, at extreme base, to just below the costa at basal fourth, narrowly lined outwardly with dark scales. Beyond the disc a moderate, whitish, sub-luniform spot, shaded with buff. A nearly straight, subterminal, whitish band, narrower than the basal band, lined outwardly with dark scales. Subterminal space with a brighter, somewhat peach-colored shade, which becomes less distinct outwardly. As in *P. cecropia* the apical interspace has a W-shaped pale mark preceded by lilac scales. Below, in the postapical interspace, is a black ocellus, margined with a blue annulus, obsolete outwardly. Terminal space dull pale wood-color, much the same shade as in *P. cecropia*, but narrower. The terminal line is narrow and but slightly waved.

Secondaries resembling primaries in coloration. A few whitish scales at extreme base. A larger, similarly colored sub-luniform spot to that on the primaries, which is produced so as nearly to attain to the outer transverse white band, which latter matches that on the anterior wings. Under surface darker, but resembling upper surface in ornamentation; secondaries with a white patch at base on costa.

Head, caputal appendages, thorax and abdomen reddish-brown, very nearly concolorous with wings. "Collar" entirely white. Abdomen with long white hair, fringing the segments posteriorly, very distinct in the female; in the male the bands are more confused. The sexes resemble each other.

Exp. ♂, 3.85-inch. ♀, 4.25 inches. Length of body, ♂ 1.10, ♀ 1.85 inches.

Habitat.—California (San Francisco). Mr. J. Akhurst, Mrs. S. W. Bridgham.

The California species shares the structural features of *P. cecropia*. The neuration, shape of the wings, and the pattern of the ornamentation will readily distinguish this species from ♀ *Callosamia promethea*, which, in size and coloration, *P. californica* somewhat resembles.

It is not impossible that this species may be "*Saturnia Euryale*" Bois; if so, this latter name cannot obtain, since it has not, as far as I am aware, been sanctioned by any description.

individuals than I have had access to need to be instituted, to perfectly establish the Cuban species as distinct, a position, however, which I have assumed in the present paper. I describe two species of *Crocota*, which differ in their larger size from the United States species, while structurally, I find no difference. A comparison of the Cuban specimens of *Utetheisa*, with those from the United States, has led me to unite *U. bella*, *U. ornatrix*, and *U. speciosa*, as forms of one variable species. With this single exception, the Cuban Bombycidae are specifically distinct from those of the United States. The American Tropical genus *Ammalo* has a representative species in *Ammalo impunctus*, m., which seems to me distinct from the South American *Ammalo helops*, Cramer, sp. *Erpantheria* has its representative species in *E. albicornis*, m.; when we consider the limited representation that this genus affords in the United States, and the very numerous South American, Mexican and West Indian species already noticed by authors, we shall agree that it is properly a Tropical genus, and thus the presence of a distinct species, as I believe in Cuba, from one in Jamaica, assists our conclusions that the different Islands composing the West Indies form different Faunal Provinces with the general features of a Faunal District in common. The genus *Halisidota* appears in Cuba in conjunction with allied forms which indicate its position with greater clearness, since, in our Fauna, it rather sharply contrasts with the genera with which we are led to associate it. It is very interesting as affording a representative species of *H. tessellaris*, and one that has been hitherto confounded with Sir J. E. Smith's species, though beautifully and very amply distinct from it. I have named this species *Halisidota cinctipes*, from the neatly banded legs, which afford a ready character as opposed to *H. tessellaris*. It is interesting to find a species of *Perophora* in Cuba, differing strongly from *P. Melsheimerii*; as far as I can judge, the species of *Perophora* offer marked differences of shape and structure among themselves, so that we have not to depend entirely upon coloration, or size, in discriminating between the species. An analogous character is offered by the Ceratocampid genus *Anisota*. The genus *Cydosia* Westw., which I refer to the *Lithosiinae*, is one of those which "appear to unite" the sub-family with the Tineites. Another genus has been described by Dr. Clemens under the name of *Paciloptera*. Specimens of *P. compta*, Clem., occurred to me in St. Louis, Mo., but unfortunately they have been mislaid, and I cannot compare them with *C. nobilitella*. Under the impression that they constitute a distinct genus, aided by Dr. Clemens' elaborate generic

description, I propose for our genus the generic term *Æta*, that of *Pœciloptera* being already pre-occupied in Insecta. Our species will thus be known as *Æta compta*. Under the number 821, Prof. Poey sends a specimen of a very brilliant little species, which offers much casual resemblance to *Cydosia* and *Æta*; the character of the head and the neururation of the secondaries, induce me to refer it to the *Tineites*.

I have not cited the MSS. determinations of Prof. Poey in this Paper, but contented myself with giving the numbers of the MSS. Catalogue, as in my Paper on the Cuban Sphingidæ, and for pretty much the same reasons. But nine of the species are determined. Six of these—Nos. 207, "*Lithosia bella*;" 613, "*Dejopeia nobilitata*;" 175, "*Oiketiscus Poeyi*;" 79, "*Euproctis argentiflua*;" 112, "*Arctia jussiaæ*;" 511, "*Erithales guacolda*,"—received specific names which, with an unimportant change in one instance, I have adopted. The remaining three are Nos. 166, "*Lithosia tessellaria*" (*Halisidota cinctipes*, m.); 191, "*Ecpantheria scribonia*" (*Ecpantheria albicornis*, m.), and 187, "*Bombyx Helops*" (*Ammalo impunctus*, m). The rest are undetermined.

The specimens are sometimes in good condition, but of certain species I am unable to give perfectly complete descriptions on account of the faded or defective state of the material. I think that in no instance, however, has this interfered with the intelligibility of the descriptions. It is to be hoped that the Society will receive further material of some of the species, so that we may become better acquainted with them. I express this desire in particular with regard to *Psychonoctua personalis*, *Hymenopsyche thoracicum* and *Xyleutes piger*. The former genus is very interesting if we accept the hypothesis which I here adopt, that the ♂ and ♀ specimens are correctly associated. In this genus the structural characters are so opposed in the two sexes, that these would not be referred to the same genus, if considered singly. The coloration alone appears to unite the specimens. The oral and pterogostic structure of the ♂, induce me to refer it to that anomalous sub-family, the Psychidæ, where great sexual differences are, indeed, not unusual. The discovery of the immature stages of this genus cannot fail to be attended with great interest. We are frequently deceived by the appearance* of in-

*I would not be understood as differing from the strictures that scientists have passed upon Dr. Emmons' State work on Insects, but it seems to me that the reason that *Cressonia juglandis* is therein determined as "*Bombyx*"—and *Passalus cornutus* as "*Scarites*"—is, that they look like it. And this illustrates the point.

sects, which is at times at variance with their structure, so that both and together must be studied, to determine properly their classificatory position. The failure, at times, to do this, seems to me the only fault of Hübner in his "Verzeichniss." At first sight, the grey color and proportions of *Psychonoctua* would lead us to consider it as belonging to the *Noctuidæ*.

Sub-Family, LITHOSIINÆ.

CYTORUS, nov. gen.

Allied to *Crocota*, Hübner. Head large and prominent. "Front" broad. Antennæ short and stout, tapering to the tips, biserrate. Wings broad. Anterior wings rounded at the apices and along external margin. Posterior wings ample, rounded at costal angle and along external margin. Abdomen short, not as long as the secondaries. Thoracic parts well developed; prothoracic pieces broad. Labial palpi flexuous; terminal joints somewhat depressed, exceeding the front. This genus differs from *Crocota* in the wider clypeus, more prominent eyes, shorter, stouter and serrated antennæ, and in the rounded apices of the primaries.

Cytorus latus, n. sp. (Plate 4, fig. 1, ♂.)

Primaries ferruginous-tawny, with irregular shades. A prominent broad white basal streak extends for one-fourth the length of the wing longitudinally below the median nervure. Secondaries pale reddish-luteous, contrasted, in their much paler color, with the dark primaries; entirely immaculate.

Under surface of both pair, immaculate. The primaries are covered with brighter, more reddish scales than their upper surface; secondaries paler, concolorous with their upper surface. Head, caputal appendages and thorax, immaculate, nearly concolorous with primaries above. Abdomen somewhat paler than thorax, without markings. Two specimens. Exp. ♂, 1.00 inch. Length of body .40 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 474, *Poey's MSS. Catalogue*.

CROCOTA, Hübner.

Crocota heros, n. s. (Plate 4, fig. 2, ♀.)

Size large. Palpi moderately exceeding the "front;" antennæ slender and rather long. Tawny fulvous. Anterior wings straight along internal margin; costal margin arcuated, depressed at apex; external margin very moderately oblique, nearly straight. Squamation obscure tawny fulvous, presenting dark reflections from the discal spot

and sub-basal band of the under surface. Except a basal, longitudinal, whitish streak, bordered finely by dark scales, the anterior wings show no distinct markings of any kind. Posterior wings fulvous, with a reddish tinge, which latter obtains principally at the apices and along terminal margin, and with distinct, black, interrupted fasciæ. A continued, angulated, broad, black sub-basal band, not attaining costa. Beyond, a wide, sub-luniform, black discal spot. A sub-terminal, broken, macular, black band.

Under surface fulvous, with a reddish tinge on both pair. Primaries with a broad, sub-basal, transverse band, a large black discal spot, and an obsolete, sub-terminal series of black dots. On the secondaries the markings of the upper surface are exactly re-produced.

Caputal and thoracic squamation, unicolorous with primaries; former with a faint reddish tinge. Abdomen, paler, obsoletely marked with blackish on the segments above. Legs, finely scaled, with a faint greyish shade on the tarsi; inwardly the tibiæ and femora are clothed with reddish fulvous squamation. Exp. ♀, 1.25 inch. Length of body, 0.45 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 1024. *Poey's MSS. Catalogue*.

Crocota disparilis, n. s.

Palpi rather stout, moderately exceeding the "front," depressed; antennæ moderate, shorter than in *C. heros*. Anterior wings straight, along internal margin; costal margin arcuate, depressed at apex, which latter is determinate, the external margin sloping away from it inwardly, thence outwardly rounded to internal angle. Upper surface of primaries rich, intense brown, with whitish, unequal maculations; one of these latter at extreme base, one on the disc, beneath this last is a third, the largest and most prominent. A fourth is placed subcostally before the terminal space. These spots are variable, and hardly afford a specific character, except in a general sense. The terminal space is paler than the rest of the wing, and neatly defined. Posterior wings bright fulvous, resembling closely those of *C. heros*, m., shaded with reddish and fasciated with black. A broad angulated basal band, beyond which, a broad black discal spot; a sub-terminal interrupted macular band.

Under surface of anterior wings dusky, evenly covered with reddish scales; a broad, black, transverse, sub-basal band, bordered with a pale shade; a reduced black discal spot; sub-terminally an obsolete series of blackish points. Under surface of secondaries exactly re-producing the markings of the upper surface.

Head and thoracic parts above, rich, dark brown, concolorous with primaries. Abdomen, fulvous, with indeterminate dark markings on the segments above. Legs at base and basal palpi joints, clothed with reddish scales. Three specimens agree perfectly, except that the subterminal spot on the upper surface of primaries is absent in a single specimen. Exp. ♀ 1.15 inch. Length of body, 0.40 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 227, *Poey's MSS. Catalogue*.

Resembles *C. quinaris* Grote, (of which species I regard *C. choroina* Reakirt, as a synonym) but is sufficiently distinguished by its larger size, the less oblique external margin of the primaries and their very different coloration, as well as the ornamentation of the secondaries which curiously resemble those of *C. heros*, m., a species otherwise quite distinct.

UTETHEISA, Hübner.

Utetheisa bella.

Tinea bella, Linn., Syst. Nat. p. 885. (1767.)

Noctua ornatrix, Linn., Syst. Nat. p. 839. (1767.)

—— *bella*, Drury, Exot. Vol. 1, p. 51, Plate 24, fig. 3. (1770.)

—— *ornatrix*, Drury, Exot. Vol. 1, p. 51, Plate 24, fig. 2. (1770.)

Bombyx bella, Fabricius, Syst. Ent. p. 585. (1775.)

Noctua ornatrix, Fabricius, Syst. Ent. p. 586. (1775.)

Phalaena bella, Cramer, Exot. Vol. 2, p. 20, Plate 109, fig. C—D. (1779.)

Phalaena ornatrix, Cramer, Exot. Vol. 2, pp. 107—108, Plate 166, figs. C, D, F. (1779.)

Bombyx bella, Fabr., Sp. Ins. Vol. 2, p. 203. (1781.)

Bombyx ornatrix, Fabr., Sp. Ins. Vol. 2, p. 203. (1781.)

Bombyx bella, Fabr., Mant. Ins. Vol. 2, p. 131. (1787.)

Bombyx ornatrix, Fabr., Mant. Ins. Vol. 2, p. 131. (1787.)

Bombyx bella, Fabr., Ent. Syst. Vol. 3, p. 479. (1793.)

Bombyx ornatrix, Fabr., Ent. Syst. Vol. 3, p. 479. (1793.)

Utetheisa bella, Hübner, Verz. Schmett. p. 168. (1816.)

Utetheisa ornatrix, Hübner, Verz. Schmett. p. 168. (1816.)

Utetheisa ornatrix, Hübner, Samm. Exot. Schm. Vol. 2, Lep. 3, Phal 2, Ver. 4. (1806—1824.)

Deiopeia bella, Westw. Ed. Drury, Vol. 1, p. 46, Pl. 24, fig. 3. (1837.)

Deiopeia ornatrix, Westw. Ed. Drury, Vol. 1, p. 46, Pl. 24, fig. 2. (1837.)

Deiopeia bella, Walker, C. B. M. Lep. Pt. 8, p. 568. (1854.)

Deiopeia ornatrix, Walker, C. B. M. Lep. Pt. 8, p. 567. (1854.)

Deiopeia speciosa, Walker, C. B. M. Lep. Pt. 8, p. 568. (1854.)

Deiopeia bella, Morris, Syn. Lep. N. A. p. 251, App. p. 313. (1860.)

Deiopeia bella, Harris, Ins. Inj. Veg. new ed. p. 342, Pl. 6, fig. 3. (1862.)

Utetheisa bella, Pack., Syn. U. S. Bomb. Proc. Ent. Soc. Phil. p. 105. (1864.)

I believe that Fabricius' question in regard to *U. ornatrix*, "An satis distincta a *B. bella*?" will have to be answered in the negative. I have before me thirteen Cuban specimens (♂ and ♀) of *U. bella* from

Prof. Poey's collection, which show an extent of variation that leaves no doubt on my mind that *U. ornatrix* is merely a form of that species. To a specimen which actually corresponds with the figures of *U. ornatrix* of Drury, Cramer and Hübner, and which I have also received from the West Indies, there is a perfect gradation of obsolescence in the markings of the upper surface of the primaries, from the typical form described under the specific name of *bella*, by Linnæus. The first specimen above *U. ornatrix*, exhibits one or two disconnected dots of the transverse macular bands of *U. bella*; in this specimen the posterior wings correspond exactly with the figures and with the specimen of *U. ornatrix*, which I have before me. The markings of the posterior wings are so variable that no specific character can be drawn from their ornamentation. From a specimen in which these are largely taken up with black bands and markings, to one entirely pink, with no black, except a narrow broken terminal line, there exist all sorts of variation, too numerous to describe, but sufficiently to be understood by the two extremes. The under surface presents no specific characters by which the two species might be separated, neither do the caputal, thoracic and abdominal parts. I seem, therefore, authorized to unite these two species, while I am not decided as to the value to be acceded to the form hitherto known as *U. ornatrix*; intermediary individuals will probably prove as plentiful as either form, and it is perhaps better to consider them all as constituting one variable species which may retain the name of *Utetheisa bella*. I am doubtful that *Deiopeia speciosa* Walker, is distinct from the present species. The description in the C. B. M. is insufficient to separate the species from *D. bella*; indeed it corresponds accurately with the specimens of *D. bella* from Cuba, in which the usually orange-colored primaries are more or less red or pink. With regard to *Utetheisa* (?) *aurea*, (*Deiopeia aurea* Fitch) supposing Dr. Fitch's generic reference to be correct, I must consider it to be a distinct species, having seen no approximation to the description in the specimens of *U. bella* that I have hitherto examined, while its smaller size indicates its specific distinctiveness, since *U. bella* is remarkably constant in alar expanse. I refer to some interesting remarks on the variability of *U. bella*, by Dr. Packard, in his paper on the Bombycidae of the United States, and briefly mention here an extraordinary accidental variety which I find among Prof. Poey's specimens. This is a female specimen in which the anterior wings display the normal ornamentation of *U. bella*, though the ground color is red, (*D. speciosa* Walker) not orange-yellow, but the secondaries are sub-hyaline with pale testaceous

delicate squamation, while the nervules are diffusedly covered with pink scales, the latter color obtaining on the costa and along internal margin.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 207, Poey's MSS. Catalogue.

CYDOSIA, Westwood.

***Cydosia nobilitella*.**

Tinea nobilitella, Cramer, Exot. Vol. 3, p. 128, Pl. 264, fig. G. (1782.)

Crameria nobilis, Hübner, Verz. Schm. p. 168. (1816.)

Cydosia nobilitella, Westw., "Nat. Libr. Pl. 24, fig. 2."

Cydosia nobilitella, Walker, C. B. M. Lep. Pt. 2, p. 524. (1854.)

A specimen from Rio Janeiro in the Society's Collection does not differ from the Cuban, except that the larger white maculations in the terminal space of the anterior wings are comparatively reduced in size. The type of Hübner's genus *Crameria*, has been removed to *Ægocera* by Boisduval and made the type of *Charitina* by Mr. Walker. Exp. ♀, 1.25 inch. Length of body, .50 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 613, Poey's MSS. Catalogue.

Sub-Family, ARCTIIDÆ.

AMMALO, Walker.

***Ammalo impunctus*, nov. sp.**

♂. Reddish-ochraceous, with a slight pale stone-colored reflection. Anterior wings without distinct markings; a prominent longitudinal discal fold. A luniform pale reddish spot beyond the discal cell; two series of similar colored, irregular spots between the nervules in the terminal space, the upper series parallel with the margin, the lower (in which the first maculation is situate in the interspace between the second and third inferior nervules) is inversely oblique, the first maculation situate within the last of the first series, and the last immediately in the margin above internal angle. These maculations are normally six in number, three in each series, are faint and hardly disturb the unicolorousness which the wings present. The whole wing is indistinctly marbled with darker shade streaks; fringes short, darker colored. Beneath, the costæ are stone-colored, and the entire surface covered with pale reddish-ochraceous scales, faintly reflecting the ornamentation of the upper surface; at base, below costa, some longer, brighter colored scales. Posterior wings, pale reddish-ochraceous, immaculate, thinly clothed with scales, unicolorous, since nowhere is the coloration perceptibly deepened; fringes, short, darker colored. Antennæ long,

densely and evenly pectinated; the slender pectinations are long, and gradually and slightly decrease to the tips. Head reddish-ochraceous, impunctate. "Collar" with a slight stone-colored or obscure slaty-brownish shade, impunctate. Tegulæ reddish-ochraceous, fringed inwardly with dull brownish hairs. Thoracic disc, brownish. Abdomen pale dull reddish-ochraceous, with fine, distinct, very dark brown bands above; the first and second basal, not continued across; longer sub-tufts of hair clothe the abdomen above at base and extend over the first and second segmentary bands, thus rendering them incomplete. Palpi, prominent, exceeding the front, third article conical, finely scaled, basal articles clothed with rather bright reddish longer scales. Under thoracic parts, clothed with rather bright reddish squamation. Tongue, long, testaceous. Legs, with minute spurs on the middle and hind tibiæ, well developed; femora clothed with rather bright reddish squamation; tibiæ and tarsi pale brownish.

♀. Resembles the male. The markings on the upper surface of anterior wings are more obscured; the luniform spot beyond the disc is obsolete. Antennæ, longer than in the male, with very short and fine pectinations. Exp. ♂, 3.00 inch. Length of body, 1.10 inch. Exp. ♀, 3.30 inch. Length of body, 1.20 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 187, *Poc'y's MSS. Catalogue*.

From the character of Cramer's figure of *Ammalo Helops*, from Surinam, I can rely upon the following differences which seem to separate the two allied species. The vertex, tegulæ and base of the anterior wings show very distinct, large, black dots in *A. Helops*, which are entirely wanting in *A. impunctus*, m. The pre-basal abdominal bands are carried entirely across; the posterior wings are much darker and brighter, the markings of the upper surface of anterior wings are quite different in detail, while the two species are very similar in general coloration. This species shares the characters laid down for the genus by Mr. Walker, but the antennæ are more plumose in the ♀ than indicated in the diagnosis; the discal fold, prolonged beyond the cell, is very distinct; the abdomen extends a little beyond the secondaries; the genital structure is quite concealed. The typical species of Hübner's genus *Pelochyta* are generically distinct from *A. Helops*, which he associated with them. According to Cramer, the ♂ antennæ of *A. Helops* are "plumacées," agreeing with ♂ *A. impunctus*, m., while those of the ♀ are "filiformes" as, indeed, they are represented in the Plate, where they are shorter, slenderer and darker colored than those of ♀ *A.*

impunctus. These organs in ♂ ♀ *A. impunctus*, are dark testaceous, not bicolorous, as are those of *A. fervidus* Walk., as indicated by the description of the latter in the British Museum Lists, while generally, the differences presented by Mr. Walker's description of his species (of which the habitat is unknown), are too great to allow of its being united with the Cuban species I have just described.

SPILOSOMA, Stephens.

***Spilosoma jussiaei*.**

Arctia jussiaei, Poey, Cent. Lepidop. de l'isle de Cuba. (1832.)

Spilosoma jussiaei, Walker, C. B. M. Lep. Pt. 8, p. 679. (1854.)

Spilosoma jussiaei, Clem., Proc. Acad. N. Sci. Phil. p. 532. (1860.)

Very nearly allied to *Spilosoma virginica*, and I have great difficulty in separating it from its Northern ally, nevertheless I believe it to be a distinct and representative species. The characters assigned to it by Prof. Poey will not separate it from *S. virginica*; I record the following differences which I regard as of specific value. The under surface of the antennal stem is paler (♂ and ♀) in *S. jussiaei*, this is blackish in *S. virginica*. The terminal palpal joints seem stouter and are paler in *S. jussiaei*, in which the fore femora and coxæ are not so distinctly maculate. There are no terminal spots on the under surface of the secondaries in the Cuban specimens. With the exception that the primaries above seem not so purely white, and that the internal angle seems slightly more rounded, I see no further differences, while the Cuban species is a little smaller sized. I am sure, that unless very critical discrimination is exercised, the two species will be readily confounded. This species seems strictly a representative one, while the course pursued by some naturalists with regard to such species,* in considering them as geographical varieties, is, I think, incorrect. The specific element will probably preserve these external characters and prevent them from becoming evanescent. I am not asserting that my discriminations between the species at present under consideration are absolute, but if the paler antennal under surface of *S. jussiaei*, is a constant character as opposed to the equally constant blackish coloration of the same part in *S. virginica*, I believe that the specific element is as well preserved through this external manifestation as if one were banded with all possible shades of colorational distinction. Four (♂ ♂ ♀ ♀) specimens of *S. jussiaei* examined. Exp. ♂ and ♀, 1.70 to 1.80 inch. Length of body, 0.60 to 0.75 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 112, Poey's MSS. Catalogue.

* For instance, the action of Ménétériés, in recording *Papilio zelicaon* Boisd. as Var. *Californica* of *P. machaon*, seems improper in every respect.

ECPANTHERIA, Hübner.**Ecpanttheria albicornis**, n. s. (Plate 4, fig. 4, ♀.)

The Cuban species is readily distinguished from *E. scribonia* Hüb. by its smaller size, white antennæ and the shape of the ♂ posterior wings, since these are but slightly produced at anal angle, being similar to those of the ♀ in this respect. These characters, either singly or together, will equally separate *E. albicornis*, from the species described by Mr. Walker in the British Museum Lists, with the exception of *E. simplex* Walker, which is from a different locality, and in which the abdomen is said to be "orange above, white at the tip, with brown and white bands at the base, and with a row of blue spots along each side." Hence the species differs markedly from the Cuban species in which the abdomen is cyaneous above, with narrow bands, and resembling somewhat that of *E. scribonia*.

Head, clothed with white scales between the antennæ and behind, immaculate. Lower clypeal surface, beneath the antennal insertion, covered with pale blackish scales. Palpi, clothed with pale blackish scales. Antennæ, entirely white above, from the base to the tips; beneath, the articular appendages, in both sexes, are pale brownish. "Collar" white, with two sublateral, approximate, brownish annuli. Patagia, white; an incomplete annulus in front, which is generally joined on the inner margin to a second, larger and occupying the posterior half of the tegulæ. Normally there are six irregularly shaped annuli on the thoracic disc, which latter is white. Abdomen dark cyaneous-blue above, with brownish and whitish basal hairs. The sub-basal and median segments narrowly banded with yellow anteriorly. Sometimes these yellow bands are sub-obsolete, the yellow hairs being gathered dorsally into determinate maculations. Anal segments, entirely cyaneous; anus clothed with dark brownish or pale blackish hairs. Beneath, white, sometimes with a few brownish scales. Thoracic parts beneath, with mixed whitish and brownish hairs; legs white, all the femora, tibiæ and tarsi, spotted with brownish.

Wings, whitish; anterior pair crossed by six bands of unequal brownish annuli, the fourth, from the base of the wing, broken beyond the disc, where a few additional annuli are variously clustered. The posterior wings are more thinly covered with scales; costal marks distinct, and there is generally a short terminal series of brownish marks below costal angle, within which sometimes a series of brownish annuli, more or less filled in with dark scales. In the male this inner band is sometimes wanting, when the wings are destitute of markings, except those on the costa and terminally below costal angle. The anal angle is but

slightly produced in either sex. The hind wings vary slightly in all the specimens of either sex that I have before me, and sometimes (♀) the wing is traversed by four undulate, annulate bands. Sometimes (♂) the thoracic annuli are filled in. Six specimens (♂ ♂ ♂ ♂ ♀ ♀) examined. Exp. ♂, 1.40 to 1.70 inch; ♀, 2.00 inch. Length of body, ♂ ♀, 0.70 to 0.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 191, *Poey's MSS. Catalogue*.

EUPSEUDOSOMA, nov. gen.

♂. Primaries large, triangulate, apices produced. Costa very straight; external margin oblique; internal angle rounded, improminent; internal margin short. Costal margin twice as long as internal margin. Nervules straight; discal cell open. First, second and third m. nervules springing very nearly from one point; fourth, not greatly removed from the third. Sub-median nervure bent upwards beyond its middle towards fourth m. nervule, hence the course of this nervure in *Eupseudosoma* is opposed to that in *Spilosoma*. Secondaries reduced, somewhat quadrangulate; costal margin roundedly convex; external margin straight. (The neururation is undistinguishable, owing to the condition of the specimen.) Body, stout, finely scaled. The squamation is close and short. Head, prominent; eyes, large; epicranium broad behind. Prothoracic parts rounded towards the caputal base, well advanced before the insertion of the primaries. Thorax, globose and elevated. Abdomen, stout, closely scaled, exceeding the secondaries. The anal segment is wanting in the single specimen I have before me. Maxillæ moderate; labial palpi finely scaled, not exceeding the "front;" legs rather stout, finely scaled, provided with minute spurs. Antennæ long, bi-serrate, tapering to the tips, the serrations short, acute and rather distant.

This genus is allied to *Idalus* Walker, with the given characters of which, the single species very nearly agrees, but on comparing my species with the figures of *Idalus admirabilis*, I do not believe that, though allied, the two species are congeneric.

Eupseudosoma niveum, mihi.

—? *Chariclea? nivea*, Herrich-Schæffer, Lep. Exot. fig. 279, ♀. (1850-1858.)

Wings, white. Primaries closely and sparsely covered with a uniform white squamation; a very few scattered dark scales. Beneath, beyond basal third, a few scarlet scales on internal margin. Secondaries white, sparsely scaled; a few longer scarlet hairs within internal margin. Beneath, white, immaculate. Thoracic region above, whitish,

with a very few scattered dark scales. Head, with two faintly blackish spots, faintly yellowish between the antennæ; thoracic and abdominal surface beneath, finely scaled, whitish. Abdomen above, scarlet, with a dorsal, whitish, interrupted line. Legs, whitish; outer surface of middle and posterior tarsi and tibiæ, pale brownish.

I find no description or locality for the species in Herrich-Schæffer's work.

Exp. ♂, 1.40 inch. Length of body, 1.70 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 845, *Poey's MSS. Catalogue*.

ROBINSONIA, nov. gen.

Allied to *Halisidota* in the shape of the wings, but differing by their close squamation, and otherwise structurally throughout. Antennæ shorter in the male, with very long and slender pectinations, arranged on both sides of the antennal stem and converging inwardly at their tips. In the female the antennæ are simple to the naked eye, but in reality each joint is provided with lateral tufts of rigid scales. Head, small; clypeus, narrow, as is especially the epicranium, compared with *Halisidota*. Maxillæ short. Labial palpi short, third article short, exceeding the front. Primaries narrow; external margin very oblique; internal margin short. The median nervules are nearer together at at base than in *Halisidota*, especially the fourth. Secondaries reduced, smaller than in *Halisidota*. But three median nervules. Abdomen slight, not prominently exceeding the secondaries. Legs finely scaled.

This genus should apparently fall in between *Ecpantheria* and *Halisidota*.

Robinsonia formula, n. s. (Plate 4, fig. 3, ♂.)

♂ and ♀ White. Primaries white, with broad, pale brown, distinct bands. One along costa widening at apical third, diminishing thence to apex; one along external margin, continued without interruption along internal margin to base. An equally wide, slightly sinuate band runs obliquely across the wing, emanating from the costal band at basal third, and joining the external marginal band above internal angle. Sometimes this diagonal band is connected with that on the internal margin, beyond its middle, by accessory brown scales.

Secondaries, white, immaculate. Under surface, resembling upper. Head, yellowish-white on the "front" and above, between the antennæ. Prothoracic pieces, white, edged with brown hairs. Disc of the thorax, brown, with some whitish hairs posteriorly. Tegulæ, white, edged with brown scales. Abdomen, brownish-cinereous, darker in the male than

in the female; beneath, with the legs, paler. Anterior tibiæ, brownish outwardly. Three (♂ ♀ ♀) specimens. Exp. ♂ and ♀, 1.45 inch. Length of body, ♂ and ♀, 0.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 162, *Poey's MSS. Catalogue*.

I have named this pretty genus after my friend, the Entomologist, Coleman T. Robinson, Esq., of New York City.

HALISIDOTA, Hübner.

Halisidota cinctipes, n. s.

Nearly allied to *Halisidota tessellaris* Hüb., but beautifully distinct, and readily distinguished by the general darker color, the wider, darker and more distinctly margined bands on the primaries, the darker antennæ and palpi, and the distinctly banded legs. The specimens described by Mr. Walker as *H. tessellaris*, belong to this species which extends into Mexico and probably occurs throughout South America.

Pale brownish testaceous—*Halisidota tessellaris* is yellowish testaceous—head, larger than in its ally, in the ♀ the lower clypeal half, beneath the antennal insertion, is brownish. Terminal palpal joints, blackish, longer, and the entire palpus more prominent than in *Halisidota tessellaris*, lower joints banded with blackish, and with ochraceous scales on their outward surface. In the ♀, the palpi are almost entirely blackish, narrowly interrupted with ochraceous on their outward surface. Thoracic surface, brownish-testaceous; tegulæ, bordered inwardly with dark dull olivaceous hairs; disc of the thorax with a longitudinal greenish stripe. The "green" color is darker and more obscure than in *H. tessellaris*, and is not equally distinct in all the specimens I have. Abdomen, ochraceous, anal segments brownish, thus differing in the latter character from *H. tessellaris*. Beneath, whitish clay-color, without the yellowish shade on the under thoracic parts which characterises its ally. Legs, very distinctly banded with brown bands, analagous to those on primaries, with distinct margins. Femora, tibiæ and tarsi, all banded.

Anterior wings, dull pale brownish-testaceous, traversed by five geminate brown lines as in *H. tessellaris*, while the spaces enclosed by these lines are covered with darker scales than in its ally, being strongly filled in on costa. The reniform, bis-annulate spot, at the outer extremity of the discal cell, is disconnected from the costal spot above it, and is filled in with dark scales.

Secondaries, darker than in *H. tessellaris*; apices with a distinct terminate mark. Exp. ♂, 1.60, ♀ 2.00 to 2.20 inch. Length of body, ♂, 0.60, ♀ 0.70 to 0.80 inch.

Habitat.—Cuba, (Poey.) Collection Entom. Society, Philadelphia.
Number 166, Poey's MSS. Catalogue.

One ♀ specimen is labelled "Vera Cruz." Mr. Walker gives an extended habitat for this species. The United States specimens in the British Museum Collection probably belong to *H. tessellaris*, the others, including the specimen from Venezuela from which Mr. Walker drew up the description of *H. tessellaris*, belong to *H. cinctipes*, I have no doubt.

***Halisidota cubensis*, n. sp.**

Primaries irregularly and entirely mottled with brownish and pale streaks. A few brighter scales on internal margin at base, where the markings are more determinate. Secondaries semi-transparent, the scales slightly aggregated along the terminal margin. Internal margin sparsely covered with longer and paler scales. Under surface of both wings without prominent coloration, merely discolorous.

Palpi, long and prominent, paler beneath, laterally darker colored. "Front," brownish; base of antennæ, pale, and between these a transverse line of pale scales; behind, covered with brown scales. Prothoracic pieces brown, edged with pale and pale vermillion hairs. Tegulæ, brown, broadly margined inwardly with pale scales. Disc of the thorax brown, mixed with pale hairs arranged longitudinally. Abdomen, pale vermillion above. An obsolete dorsal row of brown spots, observable in certain specimens towards the anus. Anal hairs entirely brown. Laterally, a double row of distinct brown segmentary spots. Beneath, immaculate, whitish cream-color. Legs, whitish; all the femora pale vermillion on their inward surface. Five coincident specimens. Exp. ♂ and ♀, 1.80 to 2.10 inches. Length of body, 0.70 to 0.80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 611, Poey's MSS. Catalogue.

Resembles the description of *Halisidota* (*Halesidota*) *strigosa* Walk., from Jamaica, but the under abdominal surface has not "four rows of black spots." There are other differences which prevent its reference to that species, as will be seen from a comparison of Mr. Walker's description with that of *Halisidota cubensis*.

EUHALISIDOTA, nov. gen.

Size somewhat larger than *Halisidota*, which the single species resembles, but is sufficiently distinguished by the shape of the wings and the neurational characters. Costa straight, not so depressed before the apices as in *Halisidota*; external margin evenly rounded, not excavate below the apices; internal angle rounded and not prominent. The

first and second median nervules arise from one point, the third further removed and thus resembling the disposition of these nervules in *Halisidota*, but the fourth m. nervule springs from the m. nervure at about the middle, hence is much further removed towards the base of the wing than in *Halisidota*. Secondaries, well-sized, with acute apices; external margin evenly rounded, very slightly excavate before anal angle. The third m. nervule is well removed from the point from whence the first and second spring, while the fourth is greatly removed towards the base of the wing. All the nervules further apart, rendering the interspaces and the entire wing relatively wider.

Head, large and pressed against the prothoracic parts; clypeus, subtriangulate, narrowing towards the base, wider than in *Halisidota*. Palpi, prominent, porrect, held apart, apical joints slender and short, inclined forwards. Maxillæ, moderate. Antennæ, rather long, finely and shortly pectinate to their tips (♀). Basal sockets, large and prominent. Prothoracic, pieces narrow. Thorax, globose and elevated. Abdomen stout, exceeding the secondaries; genitals concealed; anal segment greatly and suddenly narrowed (♀).

The squamation is thin and powdery, not fine and close as in *Halisidota*; the single species is pale yellowish clay-colored, irregularly sprinkled with black dots on the primaries and over thoracic region above.

Euhalisidota luxa, n. sp. (Plate 4, fig. 5. ♀.)

♀. Very pale yellowish testaceous. Primaries, marked with irregular and sparse black powdery dots; these are plainer on the costa and form two interrupted geminate bands at basal third, of which the second is irregularly continued to internal margin, while the first is apparently discontinued below the median nervure. Beyond, two central black dots. The apical third of the wings, irregularly and sparsely sprinkled with small black dots, congregated beyond the extremity of the discal cell. The ground color of the wing shows no darker shades, being unicolorous whitish clay-color.

Secondaries, pale testaceous, semi-transparent. The scales are laid on evenly and thinly; the internal margin fringed with longer hairs. No markings or shades of any kind.

Under surface of primaries whitish testaceous, resembling upper surface in coloration, and without markings of any kind.

Head, and upper thoracic parts like primaries in coloration; "front" with a few dark isolated scales, which do not prevent the appearance of unicolorousness; "collar" with central black scales on both sides; tegulæ

with central black marks; disc of the thorax, a little darker, with scattered black scales.

Abdomen, darker, slightly ochreous above; paler beneath. I detect no prominent markings, but in the individual I have under observation it is somewhat rubbed. Legs, colored like the body; inward surface of anterior femora, distinctly ochraceous. Exp. ♂, 2.50 inches. Length of body, 1.00 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 1042, *Poey's MSS. Catalogue*.

It is possible, that among the species of *Hulisulota* described by Mr. Walker in the British Museum Lists, more material belonging to this genus will be found. From the descriptions, the species cannot be referred to any of these.

PAEUCHÆTES, nov. gen.

The Cuban species differ from *Euchætes egle*, in the closer, more sparse squamation, which becomes sub-diaphanous on the secondaries. The neururation very nearly agrees; the secondaries are hardly so full, the internal nervures more propinquitous. The head and thoracic parts are more finely scaled. Head wider behind, more prominent; palpi smaller, not exceeding the front. The fringes on the wings are shorter than in *E. egle*. The distinctional characters that I have observed seem to warrant the erection of the new genus.

Pareuchætes cadaverosa, nov. sp.

Pale dull yellow. Primaries, pale dull yellow, immaculate above and beneath. Secondaries, paler than the primaries, immaculate above and beneath, sub-diaphanous. Body, closely scaled. Head, with a more ochreous shade. Prothoracic pieces, tegulæ and thorax, concolorous with primaries. Abdomen of a deeper, more ochreous yellow; a dorsal segmentary series of dark brownish spots. A single reduced lateral series of spots. Beneath much paler. Under thoracic surface and legs, yellowish. Tarsi and anterior and middle tibiæ, brownish. Antennæ brown, with stout, short pectinations, produced from the under surface. In the female the pectinations are shorter, but quite distinct. Four specimens (♂ ♂ ♀ ♀). Exp. ♂, 1.30 to 1.40, ♀ 1.40 inch. Length of body, ♂ and ♀, 0.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 406, *Poey's MSS. Catalogue*.

Pareuchætes affinis, nov. sp.

Very nearly allied to *P. cadaverosa*, but I regard it as a distinct species. Smaller, of a more clayey yellow, entirely immaculate; no

abdominal maculations in either sex. The antennæ are paler brown; in the female, the pectinations are very minute, so much reduced as to appear to be wanting to the naked eye, and it needs a tolerably strong magnifier to discover the slight processes which emanate from the antennal articles. In the male specimen, the antennæ are defective; enough remains of them to show that these are more strongly pectinate than in the female. Two (♂ and ♀) specimens. Exp. ♂ and ♀, 1.20 inch. Length of body, 0.40 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 406, "var.," *Poey's MSS. Catalogue*.

ERITHALES, Poey.

Erithales guacolda.

Erithales guacolda, Poey, Cent. Lepid. Cuba, Decade 2. (1832.)

Erithales guacolda, Walker, Cat. B. M. Lep. Pt. 7, p. 1638. (1856.)

Two (♂ and ♀) specimens.

This interesting species has been well figured by Prof. Poey, and the characters of the genus explained. The specimens before me are much paler than in the figure, probably for the reason that, with other material in the present collection, they have become faded through age.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 511, *Poey's MSS. Catalogue*.

Sub-Family, DASYCHIRÆ.

EUPROCTIS, Hübner.

Euproctis argentiflua.

Euproctis argentiflua, Hübner, Samm. Exot. Schm. Lep. 3, Bomb. 2, Ver. 3, Leu. A, Alb. 2. (1806—1824.)

Euproctis argentiflua, Walker, C. B. M. Lep. Pt. 7, p. 1729. (1856.)

Two specimens, ♂ and ♀.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 79 *Poey's MSS. Catalogue*.

Phryne immaiculata, nov. gen. et. sp.

Under the number 229, Prof. Poey sends specimens of a species differing generically from *E. argentiflua*. This small species is entirely milk-white; the corporal parts are finely scaled; head narrower across the vertex than in *Euproctis*; antennæ simple. The sub-ovoid cocoonet accompanies the specimens. This is flattened beneath, of firm texture, and with a circular lid at the smaller end, through which the imago makes its escape. The delicate shell of the chrysalis protrudes through the opening. This genus, which is smaller than *Euproctis*, shows evident affinity with those *Limadodes* with simple antennæ, and resembles casually a glistening white crambid with very long wings

sent under the number 573. Exp. ♂, 1.20 inch. Length of body, .40 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Ulosata cretata Grote, from Louisiana, evidently occupies an intermediate position between *Euproctis* and *Lagoa*. It resembles the former genus in the squamation and in the silky whiteness of the wings, while the antennal structure allies it closely with *Lagoa crispata*, Packard. The scales so closely hide the wings of these species, that neuronal characters are impossible to be observed without the destruction of the specimens.

Sub-Family, PSYCHIDÆ.

ŒCETICUS, Guilding.

Œceticus Poeyi.

Oiketeticus Poeyi, Lucas, (Auth. Poey.)

I have not seen Lucas' work, in which this species is described. Judging from the figure of the male *Œ. Kirbii*, Guilding, given in Griffith & Pidgeon's "Cuvier," Vol. 2, p. 679, Plate 132, fig. 1, ♂, the male of *Œ. Poeyi* differs by its smaller size, and in that the anterior wings are more produced apically, the external margin more oblique, while the posterior wings are greatly excavate on external margin. Dr. Herrich-Schæffer figures *Œ. fuligator* from Brazil, in the "Lep. n. a. m. cog.," and this figure nearly agrees with the Cuban specimens, and may be the same species. However, it appears to represent a larger insect, with longer abdomen; there is a basal dash above internal margin on the primaries which is well defined; this is absent in *Œ. Poeyi*, in which the base of anterior wings at this place has merely a diffuse darker shade. I have not sufficient material to judge from, and cannot say whether all these species are identical or not, while I incline to believe them distinct. Certainly if *Œ. Poeyi* is distinct from *Œ. Kirbii*, the species figured by Dr. Herrich-Schæffer is also distinct from Guilding's species as figured in Griff. & Pidg. work above cited.

Dark brown; the discal field of the primaries largely shaded with very dark brown. A vitreous irregular transverse bar, beyond the discal cell. Secondaries darker than primaries; external margin greatly concave.

The shell of the remarkable female of this species accompanies the specimen. Alcoholic material of the latter would be needed, in order to study its peculiar structure. Exp. ♂, 1.40 inch. Length of body, .80 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 175, Poey's MSS. Catalogue.

HYMENOPSYCHE, nov. gen.

Head small; compared with *Eceticus* it is less exserted, more sunk in the prothoracic parts, which latter are more prominent and elevated than in its ally. Oral structure obsolete. Abdomen, exceeding the secondaries by half or nearly half its length, stout. The corporal parts in their entirety are clothed with upright, loose, furry squamation; tarsi, naked, unguiculate. Wings, vitreous, or nearly so, very sparsely covered with scales within the internal margins of either pair; nervures and costa with scattered scales. Primaries, broad; costa, straight; external margin, roundedly oblique; internal margin, short, the angle rounded. Costal nervure, simple, joining the costa before the apex. Sub-costal nervure, approximate and parallel with costal, throwing off two nervules to costa, which these join beyond the end of the costal nervure. A third is thrown off in a straight line to apex, before which it is furcate. A fourth nervule arises near the point from whence the third is thrown off and runs somewhat depressedly to external margin. Fifth springs from the discal cross-vein, well removed from the fourth. Discal cell large, sub-triangular, traversed longitudinally by a distinct median fold, or thickening of the membrane. A second, lower fold, springs from the m. nervure and is shortly continued to the cross-vein, approximate to the point of origin of the first m. nervule. The cell is closed by a thickening of the membrane, not by a true nervure, since from the origin of the fifth s. c. to that of the first m. the cross-vein is obsolete. Median nervure, geminate from its base to the discal cell. First and second m. nervules, thrown off near together and divaricating to the margin. Third, thrice farther removed from second, than second from first. First m. nervule, furcate before the margin. Sub-median nervure, prominently sinuate and angulated at the point of its greatest distance from internal margin, thence running obliquely downwards to the margin which it joins at internal angle. Secondaries, reduced; external margin, hardly rounded, nearly straight, exserted before anal angle; the wing is well developed towards internal margin, which is folded downwards. Costal nervure, arcuate, strong, forming the upper margin of a large enclosed discal cell. Nervules extremely stout. This cell is traversed by a strong fold emanating from the costal nervure just beyond the base, and by a median fold similarly emanating from the m. nervure. Median nervure, strong, throwing off first, second and third short m. nervules; third, a little farther removed from second, than second from first, and also longer. Sub-median and internal nervures, simple, independent, running closely together at base, sepa-

rating to external margin. Sub-median with a basal upward projection. Antennæ resembling those of *Æceticus*, widely bi-pectinate at basal half, terminal joints with small serrations, flexuous, recurved.

Female, apterous, vermiform.

Type: *Æceticus coniferarum*, Harris.

This genus differs from the closely scaled species of *Æceticus* in many particulars, though a near ally. It resembles greatly the figure of *Animula dichroa* H-S., from Venezuela, and may be identical with it. Since, however, no specific or generic diagnosis is given of the South American species, I cannot accept that genus, while the figure differs in detail. The secondaries are more reduced and rounded, and the nervulation is different. The first m. nervule of the primaries is not furcate.* The antennæ seem equally pectinate from base to tip, the latter not flexuous. The genital organs have a different representation. *Hymenopsyche* contains two species, differing slightly from one another in (♂) structure, as indeed is the rule rather than the reverse in the present Sub-family, as well as in the *Ceratocampadæ*.

Hymenopsyche thorasicum, n. s.

Smaller than *H. coniferarum*. Wings more sparsely scaled. Thoracic region above, and supra capital parts, clothed with pale, somewhat sericeous hair. Elsewhere the rather coarse and stout squammation of this little species is brownish-black. First m. nervule of the primaries strongly furcate. A cell is formed by an obsolete "vein," running from the base of the wing to the angulated portion of the sub-median nervure. This is obsolete in my specimens of *H. coniferarum*. M. nervure not distinctly geminate at base. Genitals displayed, consisting of a flattened, corneous, acutely cordate piece, from beneath which a slender, blunt, longer process is protruded, held in a lower basal sheath, embraced by the lateral claspers. Two specimens. Exp. ♂, 1.00 inch. Length of body, 0.45 inch. ♀ unknown.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 183, Poey's MSS. Catalogue.

PSYCHONOTUA, nov. gen.

In the male the antennæ are short, closely bi-pectinate laterally, to half their length from the base; the pectinations are fine and rather close, and decrease suddenly at the middle of the antennæ, the terminal half of which is provided with very short processes, appearing simple to the unassisted eye. Scape moderately prominent and tufted.

*In a single individual of *H. coniferarum*, that I have before me, this furcation is obsolete on the right primary.

In the female the antennæ are long and entirely simple. The male antennæ are less than half as long as those of the female, and bear a rather close resemblance to those of the ♂ *Æceticus*. Head, projected, but not prominently visible from above; clypeus broad. Prothorax well developed; thorax, flattened above. In the female the head is larger than in the male. Labial palpi small in the male, pressed against the front which they do not exceed in either sex, but are more prominent in the female. The maxillæ are moderately developed in the female. I do not detect their presence in the male. Beneath, the eyes, which are well developed, are approximate. The ♀ hind tibiæ are spurred at the base of the joint, and have a lateral, longerspur at about the middle of the joint. The anterior wings, in the male, are narrow, not much dilated on external margin. Costa straight, external margin evenly rounded, short, since it is not oblique, the internal margin being nearly as long as the costal margin. Discal cell closed. First and second m. nervules springing from one point. Third, a little removed. Fourth, thrown off slightly nearer the third than usual, depressed, since it joins the margin at internal angle. Interspaces, narrow. Internal nervure, very sinuate, joining the internal margin before the angle. The internal margin is sinuate, following the course of the nervure. In the female the external margin is more oblique; the internal margin is straight; the nervure is straight and joins the external margin at the internal angle; the median nervules are straighter, longer, the fourth joins the external margin much before the internal angles. There are but three median nervules, while the costal nervulation differs markedly. In the male the c. nervure throws off three divaricating nervules at the point of anastomosis with the curved discal cross-vein. In the female the costal nervulation is normal; in both sexes a discal nervure is thrown off from the centre of the discal cross-vein to external margin. There is a corresponding disparity between the sexes in the nervulation of the secondaries. Abdomen, tapering in the male, exceeding the secondaries; genitals concealed.

The structural differences between the two specimens I have before me are very great, and I with difficulty believe them to belong to one species. Nevertheless these differences are mostly neuronal, if we except the antennal and, perhaps, the maxillary characters. The two specimens are sent as ♂ and ♀ of one species by Prof. Poey, under one number. The general coloration is similar, squamation sparse. In case of error, I propose, that the generic and specific names I here adopt, shall be retained for the male specimen. I am prepared here

for extraordinary structure, since the genus evidently belongs to that anomalous group—the Psychidæ.

***Psychonoctua personalis*, nov. sp.**

Whitish cinereous. Ornamentation sub-obsolete. In the male some obscure marblings of brownish scales along internal margin and terminally. Secondaries whitish, without markings. In the female specimen there is a terminal line and a series of sub-terminal, dark, interspaceal, short dashes. Secondaries with a broad, diffuse, pale blackish band along external margin. Head, thorax and abdomen, whitish cinereous, paler, nearly white, in the male. Under surface of thoracic region, clothed with long whitish hair which is shorter, however, than in the male. Both specimens are a little rubbed. Exp. ♂, 1.60 inch; ♀, 2.00 inch. Length of body, ♂, .80 inch; ♀, 1.00 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 850 *Poey's MSS. Catalogue*.

PEROPHORA, Harris.

***Perophora Packardii*, n. s.** (Plate 4, fig. 6, ♀.)

The Cuban species is readily distinguished from *P. Melsheimerii* Harris, by its uniform pale brownish color, being entirely without brighter shades or tints, as well as by the presence of two small superposed vitreous discal spots, which are apparently coalesced in the male. Entirely pale wood-brown, irrorate with dark scales; irrorations most prominent without the common brown line, which runs across the wings as in our Northern species. Apices of primaries more pointed than in *P. Melsheimerii*; external margin rounded to internal angles in both pair and not excavate before the angles. Very faint traces of the sub-basal costal mark are visible on the primaries, while the outer common line is paler, more brownish than in our species. Head, body and legs, concolorous with the wings, sparsely irrorate with dark scales; in the female, the abdomen very prominently exceeds the posterior wings. The male resembles the female in coloration and ornamentation, except that the vitreous discal spots appear to be united, while it is considerably smaller. The wings in both sexes are darkest outside of the common fascia, immediately within which, the primaries show their palest shade. Exp. ♂, 1.20, ♀ 2.00 inches. Length of body, ♂, .60 inch, ♀ 1.00 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 612, *Poey's MSS. Catalogue*.

From the excellent and detailed description of *Perophora Batesii*, given by Mr. Edward Newman, this species widely differs in several

structural points. The ♂ antennæ are not provided with the expanded scape, and do not differ from those of *P. Melsheimeri*. The abdomen, while exceeding the hind wings, is unprovided with the long, parallel, porrected, hirsute processes, described as characterizing the male of *P. Batesii*. The coloration also differs.

It is interesting to find this genus represented in Cuba by a distinct species. The representation of the sub-family is structurally very interesting, since it contains four species, belonging to so many different genera. From a study of the excellent figures given in the anonymous work on the Lepidoptere of Surinam, I see that the "*Bombyx vorax*" of this unknown author, represents a species allied to *Perophora*, and belonging to the present Sub-family.

I have named the Cuban *Perophora* after A. S. Packard, Jr., M. D., whose recent papers on the Bombycidae of the United States have added greatly to our proper appreciation of the most interesting Family of the Sub-Order.

Sub-Family, PTILODONTES.

HETEROCAMPA, Doubleday.

Heterocampa cubana, nov. sp. (Plate 4, fig. 7, ♀.)

Allied to *H. obliqua* Packard, but a more brownish species, wanting the white sub-apical patch and the greenish shade of the upper surface of the primaries which characterize our Northern species. The specimens, however, appear to be faded, and the greenish shades in this genus seem easily lost by age and etiolation. A geminate irregular sub-basal line. The costa is marked by alternate darker and paler streaks. Median lines outwardly arcuated, joining below at the middle of the wing, a long curved interspaceal black dash which is bordered above by a paler shade; a similar paler shade beyond the median line above internal margin. This latter shade is bounded outwardly by a faint line, which appears to be discontinued above the linear black interspaceal dash. Indistinct lines beyond the disc, discontinued above the interspaceal dash. An arcuated, black, sub-apical line, joining a very narrow streak in the interspace above the first m. nervule. A sub-terminal shade band and narrow terminal line. In the male the ornamentation is sub-obsolete. Secondaries whitish, dusted with brownish scales. Under surface of primaries brownish. Head and thorax brownish, tegulæ with internal dark marginal lines uniting in front. Abdomen, pale brownish. Antennæ shorter than in *H. obliqua*, the basal pectinations in the male not extending so far from the antennal

base. Three (♀ ♀ ♂) specimens. Exp. ♂, 1.40, ♀ 1.80 inch. Length of body, ♂, 0.75, ♀ 0.85 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 185, *Poey's MSS. Catalogue*.

CARATHIS, nov. gen.

Wings narrow. Primaries, nearly twice as long as wide; costa slightly depressed centrally, arcuated apically; apices, prominent. External margin, oblique and moderately sinuate; internal angle, rounded. Internal margin, straight. First and second median nervules springing from one point, third a little removed, fourth well removed from third. A discal fold. Secondaries reduced; costa straight, external margin slightly and gradually excavate before anal angle. The wings are cleanly cut and deprived of fringes. Squamation very close and densely and equally covering all the corporal and alar parts. Antennæ, short and stout, tapering, provided with very small pectinations, produced from beneath the antennal stem. Head, moderate, pressed against the prothoracic parts. Palpi, prominent, porrect, held free from and exceeding the front. Epicranium, broad. Prothoracic pieces, narrow. Abdomen, moderately stout, closely scaled, exceeding the secondaries by half its length. Genital organs concealed. Legs, slender, minutely spined on the third tibiæ. Maxillæ, moderate.

Carathis gortynoides. (Plate 4, fig. 8, ♂.)

Rich brown. Primaries evenly covered with brown scales, with clustered white spots, reminding one of the Noctuid genus *Gortyna*. Base with white spots, narrowly divided by brownish scales. Beyond, a yellowish transverse line, sending out, at right angles, a short branch along median nervure. Above and below this branch are white spots; the upper, spherical, the lower, elongate, sub-pyriform, tapering to internal margin. At the extremity of this branchlet a small white spot on the vein. Three prominent costal spots above the discal cell. The first, the largest, white. The middle, outwardly oblique, yellowish, shaped like an abbreviated band. The outer, the smallest, white. Immediately below these, on internal margin, a dark yellowish spot. Terminally, an elongated cluster of white spots, narrowly divided by brown scales; the larger spots placed outwardly, sub-triangular, fitting into those on the inner side are a series of pale yellowish spots; within these a series of smaller more oval spots. All these spots are more or less united in one specimen. Secondaries, pale blackish-brown; testaceous along the costa, without markings. Beneath, pale, dull brownish; on the primaries, the white guttations of the upper surface are partially re-

produced. Head brown; a parallel narrow white line crosses the clypeus before the antennal insertion. Behind, two large white spots, narrowly separated by dark scales. Thorax, brown, concolorous with primaries. At the sides, the tegulæ show large white spots. Abdomen, pale blackish-brown; terminal segments, edged posteriorly with paler scales of a warmer tint. Beneath, paler, of a warmer hue. Two specimens. Exp. ♂, 1.30 inch. Length of body, 0.60 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 470 Poey's MSS. Catalogue.

Sub-Family, HEPIALIDÆ.

Tribe, COSSINI.

XYLEUTES, Hübner.

Xyleutes piger, nov. sp.

Size moderate, smaller than *X. robinæ*, Peck sp. Dark grey. Primaries covered with a fine net-work of blackish lines, strongly marked on costa and diffused pretty evenly over the entire upper surface of the wings, leaving, nevertheless, a clear costal space before the apex at about apical third. In the male the secondaries are entirely black, except along costal margin, smaller than in the female; external margin straight, not rounded. In the female the secondaries resemble the primaries in ornamentation and coloration, external margin slightly rounded. Antennæ blackish. Thoracic parts covered with mixed grey squamation, without determinate markings. Legs whitish, tarsi and tibiæ clothed with black scales outwardly, annulated and spotted with white. Exp. ♂, 1.65, ♀ 1.60 inch. Length of body, ♀, 0.85 inch.

Habitat.—Cuba, (Poey.) Coll. Ent. Soc. Philad.

Number 173 Poey's MSS. Catalogue.

The female of this species seems to be slighter than the male. The specimens, though fresh, are defective.

The Tribe HEPIALINI—curiously resembling the Diurnal *Chionobas*, in the diaphanous and similarly sized anterior and posterior wings, and somewhat in the shape of these latter—is not represented in the present collection. *Hepialus* and its immediate allies, do not appear to be represented so fully in the New as in the Old World.

The very moderate representation of the Bombycidæ in Cuba—taking this collection of Prof. Poey's as a basis—allows of but few comparisons with the representation of the Family elsewhere, and adds, on the whole, but little distinctive value to the Cuban fauna. So far as I am aware, the Lithosiid genus and species *Cydosia nobilitella* Westw. with *Hali-*

sulota cinctipes are the only representatives of the family that occur likewise on the South American Continent. The geographical form of our Northern *Utethesia bella* Hübn., described as *Deiopeia speciosa* by Mr. Walker, occurs likewise in Jamaica, and is perhaps replaced by what may be another geographical race of the same species—*Utethesia ornatrix*—on other Islands of the West Indian Archipelago, if not, as I suspect, associated with it. In the *Arctiidæ* we have peculiar species of *Ammalo*, *Spilosoma*, *Ecpantheria* and *Halisidota*, which are, so far as we are aware, confined in their representation to the Island, and are partly replaced in Jamaica and other Islands by allied but distinct species. One species of *Halisidota* (*H. cinctipes* Grote), seems to find its northern limit to the eastward and, as we go southward from the Gulf States, by its substitution for our common *H. tessellaris* Hübn., offers the strongest evidence that we have entered on a distinct Faunal Province, while it gives no individuality to the insular fauna, since it occurs in South America and Mexico. It is not improbable that it will be taken in Texas, judging from what is known of the Fauna of that State. The utter absence of *Aitaci* and *Ceratocampidæ* deprives the Family of what is always its greatest interest and beauty, and for which no compensatory value is offered. The Family has dwindled and become unimportant, encroached upon by the *Zygænidæ*, which here appear in much greater diversity than in the colder climates of the Northern American Continent.

—o—

New Species and corrections in the family PSELAPHIDÆ.

BY EMIL BRENDÉL, M. D.

After considerable delay, I am able to add the following descriptions of new species of the family "Pselaphidæ" to my former publications:

1. *Adranes* LeContei, n. sp.—Testaceus, translucens, capite cylindrico, thorace sub-cylindrico, pone medium lateraliter compresso, elytris angulis apicalibus mediis et externis pilosis, abdomine excavato, marginato, ad basin in margine tuberculato. Long 2.5 m. m.

The general form of this insect is essentially the same as in *A. coecus* Lec., but the head is broader in front, somewhat obconical, with two very small approximate tubercles in the middle of the base, the front overhangs the face; without eyes; the vertex of the male is longitudinally bistriate. The last joint of the antennæ is a little narrower at the truncated end. The thorax, seen from above, is cylindrical, longer than the head, behind the middle laterally compressed, in the depth of the impression sulcate all around, behind which sulcus, at the middle

of the base, is a large round groove with a smooth bottom and a distinct puncture in the centre; before the groove, the thorax is suddenly elevated, forming the acute end of the median ridge of the thorax; on each side of the groove at the base is a small tubercle. The elytra are truncate at the sutural posterior angles, with tufts of yellow hair at the middle and outer angle. The abdomen is widest at the base, wider than the elytra at the tip, excavated from one side to the other, with a large smooth tubercle each side at the base on the margin. The legs are in proportion longer than in *coecus*, the anterior coxæ are cylindrical, prominent, the intermediate globose, the posterior transverse.

The male differs in the above mentioned striæ on the vertex, the intermediate tibiæ being sinuous inside and armed with a very small spur at the end, the intermediate trochanters being armed with a strong cylindrical spine, and the metasternum, which is in the female lancet-shaped reaching between the hind coxæ, is in the male much elevated, truncate and bifurcate before the posterior coxæ; between the latter are two punctures and a tuft of hair.

One ♀ was found by me some six years ago in Illinois, and specimens of both sexes were lately collected in large numbers by Mr. Chas. Sonne, in Chicago.

The honor of having discovered it to be a new species is due to Dr. John L. LeConte. The discovery of the male belongs to Mr. Sonne.

2. *Bryaxis velutina* is identical with *Decarthron formiceti*.

3. *Bryaxis clavata* (Var. *conjuncta*).—Nigra, nitida, elytris piceis, capite tri-foveata, thorace globoso, foveis tribus sulco arenato connexis, antennis maris articulis tribus ultimis valde elevatis. Long 2.0 m. m.

Separated from *B. conjuncta*, of which it differs by the antennæ of the male having the 1—2 joint subequal cylindrical, the 3—4 small globose, the 5—6 equal, larger, globose, the 9—10 much enlarged, transverse, very hairy, forming with the last, ovate, acute joint one thick club.

I consider it to be the northern climatical form of *B. conjuncta*.

This species with *B. conjuncta*, *dentata*, *abdominalis*, and the two following form one conclave, having the base at the thorax transversely sulcate and distinguish themselves as follows:

First abdominal segment of the male entire.....*B. conjuncta* and *clavata*.

First abdominal segment behind produced in a lobe....*B. dentata*.

First abdominal segment behind produced in two ac-

minate lobes.....*B. illinoensis*.

First and second segment with two lobes.....*B. floridana*.

The three first segments with two lobes each.....*B. abdominalis*.

4. *B. Illinoiensis*, n. sp.—Nigra, nitida, elytris sanguineis punctatis, thorace lateribus rotundatis, foveis tribus æqualibus vix conjunctis, abdominis articulo primo majore. Long 1.5 m. m.

The species before me is a male of black color, polished, pubescent; the elytra are red, punctulate, the dorsal striæ abbreviated before the middle. The head is bifoveate; the antennæ piceous, the 1—2 joint little larger, subequal, obconical, the 3d smaller obconical, the 4—6 larger, nearly equal, rounded, the 7—8 smallest, rounded, the 9th larger, somewhat transverse, the 10th still larger, obconical, transverse, the last, the largest, ovate acuminate. The thorax is rounded, little narrower before, equally trifoveate, the lateral grooves connected by a very slightly impressed sulcus around the base. The abdomen has the first dorsal segment larger, behind bilobed, the lobes acute not clavated over the level of the anterior part, at the base transversely impressed with two distant abbreviated striæ. The second segment has a varioloid impression at the base with eight punctures in the disk. The legs are piceous, the tarsi testaceous, the intermediate trochanters are armed with a small acute spine.

The only specimen till now known was found by Dr. Helmuth, of Chicago, who kindly sent it to me for description.

5. *B. floridana*, n. sp.—Fusca nitida, elytris minute punctulatis, thorace subangulato, foveis tribus æqualibus impresso, trochanteribus anticis muticis, antennis articulo quinto majore. Long 1.6—1.7 m. m.

The female differs very little from the female of *B. abdominalis*, but it is much smaller. The male is somewhat longer than the female, has the first and second abdominal dorsal segment bilobed behind; the first segment is transversely impressed at the base, with two distant abbreviated striæ, and a curved ridge, tending backwards to the rounded point of the lobes, leaving the intermediate space depressed, in the common notch between the lobes of the first and second segments is a varioloid impression with eight punctures in the disk; the three last segments are simple.

It was found by me in the settlements of St. John River, in Florida.

I consider these two species as climatical aberrations of the *B. abdominalis*, of which I saw only specimens from the Northeast of the U. S.

6. *B. congener*, n. sp.—Testaceus, breviter pubescens capite trifoveato, thorace trifoveato, fovea intermedia minuta, elytris stria dorsalis fere integra, antennis longiusculis. Long 1.0 m. m.

This species most resembles *B. puncticollis*, but it is less stretched, much smaller in stature, more short and heavy set, like *B. rubicunda*, of a saturated yellowish-brown color, seems not to change to a darker

hue, as the numerous specimens before me are all alike. The head has three grooves, one on the front between the antennæ, and two on the vertex; the antennæ are longer than the head and thorax together, the joints are oblong-cylindrical, the fifth joint is larger than the adjoining, the ninth and tenth obconical, larger, the last ovate. The thorax is subangulate, rounded, impunctured, with two lateral and one very small middle groove. The elytra are impunctured, shortly pubescent, the hairs very regularly disposed, the dorsal striæ are nearly entire. The abdomen is short, the first segment larger, pubescent, with two very short, approximate, obsolete striæ near the middle of the base.

It differs from *B. puncticollis* by the shorter stature, the impunctured thorax and the color; from *B. rubicunda* by the color and the extremely small size. They were found near the seashore of Long Island, N. Y.

7. *B. inornata*, n. sp.—Flava, impunctata, capite thoraceque impressionibus nullis. Long 1.5 m. m.

This insect takes the same place among the Bryaxis as *Arthmius* does among the Batrisus, and is easily recognized by the entirely smooth rounded thorax. Found in South Carolina.

8. *Batrisus cristatus* Lec. is identical with *B. ferox*—(Teste Dr. John L. LeConte.)

9. *Batrisus aculeatus* Lec. is the ♀ of *B. albionicus* Aubè—(Teste Dr. John L. LeConte.)

10. *Batrisus striatus* is a variety of *B. globosus*—(Teste Dr. John L. LeConte.)

11. *Batrisus juvenicus*, n. sp.—Elongatus, gracilis, castaneus, capite reticulato, subtriangulare oculis parvis parce prominulis, vertice minus convexo obsolete cristato, sulcis lateralibus, thorace trilineato, elytris punctatis, tibiis inarmatis. Long 1.5 m. m.

This is the smallest species known to me in stature, resembling *B. ferox*, but more elongate. The head is plano-convex, the fronte plane, the lateral margin obsoletely separated by a slightly impressed sulcus, the vertex not elevated with an obsolete depressed carina. The antennal joints are inconspicuously growing larger from the 3d—8th joint, the 9th and 10th are thicker, nearly transverse, the last ovate acuminate. The thorax is widest before the middle, punctured, obsoletely trilineate, with two carinæ between the lines, bituberculate at the base, the sides are rounded before the middle and straight, converging towards the base behind. The elytra are convex, punctured, longitudinally impressed at the base in the place of a dorsal stria. The first dorsal abdominal segment is larger than the following one, and transversely impressed at the base, in the middle and on each side. The posterior tibiæ are not armed.

A single specimen was found by me in Northern Illinois. It could be taken for a "riprarius," but the present species is much more slender, the last joint of the antennæ is not as long, and the tibiæ are not armed with a spine.

12. *Tyehus bythinoides*, n. sp.—Piceus, tomentosus, capite bifoveato, foveis sulco angulatim conjunctus, antennis articulo primo longo cylindrico, secundo globoso magno, intermediis minimis, 8vo 9no transversis, ultimo maximo ovato; palpis articulo 3tio globoso, ultimis securiformi, thorace companulato, sulco transverse basali, elytris punctatis, pedibus testaceis. Long 1.1 m. m.

This remarkable insect furnishes the connecting link between the *Pselaphi* and the *Bryaxis*. The form of the head and body forces it in the first division; the form of the palpi, antennæ, and the thoracical sulcus, are borrowed from the genus "*Bythinus*." Even the head is touched by a resemblance of the *Bryaxes* by having two small grooves on the vertex between the eyes, with furrows running forward to the frontal notch, which divides the antennal tubercles. The antennæ have the first joint very long, cylindrical, the second globular, the following six joints are small, globular, all conjoined as long as the first two, the ninth and tenth are transverse, broad, the last ovate, as long as the first and as broad as the tenth. The thorax is bell-shaped, with a basal, arcuate, transverse sulcus. The elytra are punctured, depressed, tomentose, with entire sutural striæ, and two basal impressions in the place of the dorsal striæ, which are wanting. The abdomen is short tomentose, margined; the tarsi have one claw.

A single specimen was found near New York city. It joins, in affinity, respecting the form of the antennæ, next to *Bythinus carinatus* nobis.

13. *Trimium impunctatum*, n. sp.—Fuscum, læve, pubescens, capite foveis oblongis duabus, vertice convexo, thorace ovato, foveis lateralibus minus impressis elytris convexusculus, lateribus arcuatus, latitudine longiore palpis articulo tertio globoso, ultimo minore ovato, ad basin truncato. Long 1.3 m. m.

The stature of this insect is quite a peculiar one. The elongate form of the body is marked by a very narrow waist and neck. The head is longer than broad, with two ample oblong grooves in the place of the lateral sulcus. The antennæ are shorter than the head and thorax conjoined, the first joint is long, obconical, the second very short, broader than the following, the adjoining six joints are very small, transverse, the ninth and tenth are gradually broader, lenticular, transverse, the last is very large ovate. The maxillary palpi are small, the third joint larger than the last, which is truncate at the base. The thorax is oblong convex, the sides equally curved, constricted at the base and tip, widest in the middle, with three impressions in the

angles of the double arcuate, transverse sulcus. The elytra are high-shouldered, convex, the sides arcuate, with the dorsal striæ abbreviated near the middle. The abdomen is at the base narrower than the elytra and half as long again.

The specimen described is in possession of Mr. H. Ulke.

14. *Euplectus crinitus*, n. sp.—Rufo-piceus, dense pubescens, punctulatus, capite late bifoveato, occipite emarginato, thorace punctulato ad basin foveis tribus, sulco conjunctis, elytris depressis, strio dorsalibus nullis. Long 1.4 m. m.

The head is nearly as broad as the thorax, bifoveate between the eyes, the grooves with a very short obsolete sulcus running forward. The antennæ are as long as the head and thorax conjointed, and of the usual form of this genus. The last joint of the maxillary palpi is long, ovate, acuminate. The thorax is longer than broad, rounded, densely punctured, pubescent, with three basal grooves, connected by an arcuate sulcus, branching out forward from the lateral grooves. The elytra are rectangular, longer than wide, half as broad again as the thorax, densely punctured and pubescent, with very little impressed basal grooves in the place of the faintly indicated dorsal striæ, and small punctures between it and the basal end of the sutural entire striæ. The last two segments of the abdomen are longer than the preceding segments.

It inhabits the Northern States.

NOTE.

BY BENJ. D. WALSH.

I find that I had no good and sufficient ground for asserting on page 198 that Baron Osten Sacken maintains the doctrine "that, under no circumstances, is it allowable to change a single letter in a published name, unless that name be preoccupied." I therefore beg leave to withdraw that assertion.

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PROCEEDINGS
OF THE
ENTOMOLOGICAL SOCIETY
OF PHILADELPHIA.

THE Publication Committee of the ENTOMOLOGICAL SOCIETY of Philadelphia invite the Public generally to sustain the publication of the "Proceedings" of the Society, by increased subscriptions.

The public and scientific value of these Papers, has been sufficiently acknowledged, to authorize the Committee to ask for additional support, and they are more especially compelled to do so on the ground that the financial means of the Society, apart from their ordinary objects of expenditure, are insufficient to meet any loss on their sale.

Of these "Proceedings" four Volumes have already been published, illustrated by numerous Plates, and containing original papers of high scientific value on all the Orders of the Insecta.

It is intended to issue annually from one to two Volumes, of 500—600 pages each, since the material continually offering, justifies this estimate.

The Committee is unable to furnish these "Proceedings," henceforth, to the Resident and Corresponding Members of the Society at a reduced price, and trusts that they, alike with the general Scientific Public in Europe, as well as at Home, will sustain the Publication by paying for it the uniform price of \$4.00 per Volume, payment in advance, on the delivery of the first Number of each Volume.

The following firms will receive Subscriptions, as Agents of the Society:—

Messrs. WILLIAM WOOD & Co., New York City.

" TRÜBNER & Co., London.

" W. S. KIRTLAND & Co., London.

" H. BOSSANGE & CIE, Paris.

" W. S. KIRTLAND & Co., Paris.

B. HERMANN, Esq., Leipsic.

Philadelphia, October, 1865.

PROCEEDINGS OF MEETINGS.

JULY 10, 1865.

Prof. JACOB ENNIS in the Chair.

Eight members present.

The following Papers were presented for publication in the Proceedings:—

“Monograph of the Philanthidæ of North America, by E. T. Cresson.”

“On some new species of Pselaphidæ, by Emil Brendel, M. D.”

And were referred to Committees.

On ballot, Mr. George W. Biddle, Jr., was elected a *Resident Member*, and Mr. F. H. B. Loweree, of Guadalajara, Mexico, a *Corresponding Member*.

AUGUST 14, 1865.

Vice President PINE in the Chair.

Nine members present.

The following Papers were presented for publication in the Proceedings:

“North American Micro-Lepidoptera, by Brackenridge Clemens, M. D.”

“Description of a new species of *Limenitis*, by William H. Edwards.”

And were referred to Committees.

A communication was read from the Publication Committee, asking the permission of the Society to publish an occasional Bulletin, entitled “The Practical Entomologist,” to contain short papers on practical Entomology, for gratuitous distribution among Farmers and Agriculturists; the cost of publishing the same to be defrayed by private contributions.

On motion, the permission of the Society was granted.

On ballot, the following named persons were elected *Corresponding Members* of the Society:—

Dr. Cajetan Felder, V. Pres. Imper. Zool. Soc. Vienna, Austria.

Emil Brendel, of Keokuk, Iowa.

A. Bolter, of Chicago, Illinois.

W. Iuelich, of New York City.

SEPTEMBER 11, 1865.

President BLAND in the Chair.

Seven members present.

Mr. Bland exhibited specimens of *Tachinus fimbriolatus*, and a species of *Onthophagus*, which he found inhabiting a species of fungus commonly called the "Puff-ball," when in an advanced state of decay, and found in damp situations. The same species of fungus growing in higher situations were, he found, to be the habitat of a different insect—the *Dorcatoma similis* Say. In the fungus commonly called the "toad-stool," he found *Oxyporus vittata* and *lateralis*, which are apparently peculiar to this species of fungus; *Tritoma humeralis* and *thoracica* were also found quite abundantly in the same situation. Under leaves, in moist places, he found specimens of *Anceus brunneus* and *Atranus pubescens*.

On ballot, the following named persons were elected *Corresponding Members of the Society* :—

F. W. Putnam, of Salem, Mass.

Howard J. Hunt, of Burlington, N. J.

Mrs. E. F. Bridgham, of New York City.

OCTOBER 9, 1865.

President BLAND in the Chair.

Eleven members present.

The Committee to whom was referred the writing of a Memoir of the late Thomas B. Wilson, M. D., made their final report, which was, on motion, accepted and placed in the hands of the Publication Committee for printing.

The following papers were presented for publication in the Proceedings :—

"A synonymical Catalogue of North American Sphingidæ, with notes and descriptions, by Aug. R. Grote and Coleman T. Robinson."

"Lepidopterological Notes and Descriptions, No. 2, by Aug. R. Grote and Coleman T. Robinson."

And were referred to Committees.

Mr. M. C. Sommer, of Altona, near Hamburg, Germany, was elected a *Corresponding Member* of the Society.

NOVEMBER 13, 1865.

Vice President PINE in the Chair.

The following Papers were presented for publication in the Proceedings:—

“On Phytophagic Varieties and Phytophagic Species, with remarks on the unity of coloration in Insects, by Benj. D. Walsh, M. A.”

“New species and corrections in the family Pselaphidæ, by Emil Brendel, M. D.”

“Descriptions of some new species of Danainæ, by Tryon Reakirt.”

“Descriptions of some new species of Eresia, by Tryon Reakirt.”

“A revision of the Fossorial Hymenoptera of North America—Family Crabronidæ, by A. S. Packard, Jr., M. D.”

“Catalogue of the described Tenthredinidæ and Uroceridæ of North America, by Edward Norton.”

“A list of Conopidæ in the Collection of the Entomological Society of Philadelphia, by E. T. Cresson.”

“Descriptions of new North American Lepidoptera, by E. T. Cresson.”

On ballot, the following persons were elected *Corresponding Members* of the Society:—C. V. Riley, of Chicago, Ill.; Edmund Baynes Reed, of London, C. W.; E. Suffert, of Matanzas, Cuba.

DECEMBER 11, 1865.

Vice-President PINE in the Chair.

The Annual Report of the Recording Secretary was read, as follows:

REPORT OF THE RECORDING SECRETARY FOR 1865.

In accordance with an established rule of the Society, the Recording Secretary presents the following as his Annual Report for the year 1865, wherein it will be seen that much has been accomplished by the Society towards the advancement of the science of Entomology. The members have good cause to be gratified at what has been accomplished during the past year; additions have been made to the different orders embraced in this department of science, rendering great facilities for comparison and study. The Library has also been increased, and now ranks high in the category of works of reference relating to Natural

Science. For the additions to the Cabinet* and Library we are mainly indebted to Rathmell Wilson, Esq., Ex'r &c. of the late Dr. T. B. Wilson, who has generously endeavored to carry out the known wishes of his brother.

The publication of the Proceedings have been regularly continued through the past year, and has now reached its fifth volume. Special care has been taken in the style and execution of the work, and as a Society we may well feel proud of the results.

During the year past, there have been presented for publication 33 Papers, as follows:—

5. By *E. T. Cresson*, to wit:—
 - "Catalogue of Hymenoptera in the Collection of the Entomological Society of Philadelphia, from Colorado Territory."
 - "Description of some new species of Mutilla, from California."
 - "Monograph of the Philanthidæ of North America."
 - "A list of Conopidæ in the Collection of the Society, with descriptions of new species."
 - "Descriptions of new N. A. Hymenoptera, in the Collection of the Society."
4. By *Aug. R. Grote*, to wit:—
 - "On the synonymy of *Parathyris Angelica*, Grote."
 - "Descriptions of North American Lepidoptera. No. 6."
 - "Description of a new species of the genus *Citheronia*."
 - "Notes on certain North American Attacid genera and species."
3. By *Aug. R. Grote and Coleman T. Robinson*, to wit:—
 - "Lepidopterological Notes and Descriptions." Two Papers.
 - "A Synonymical Catalogue of N. A. Sphingidæ, with notes and descriptions."
3. By *Wm. H. Edwards*, to wit:—
 - "Descriptions of certain species of Diurnal Lepidoptera, found within the limits of the United States and British North America. No. 4."
 - "Notes upon *Papilio Asterias* and *Saturnia Promethia hermaphrodites*."
 - "Description of a new species of *Limenitis*."
3. By *Tryon Reakirt*, to wit:—
 - "Observations upon some American *Pierinæ*."
 - "Descriptions of some new species of *Danainæ*."
 - "Descriptions of some new species of *Eresia*."

*The following extracts, made from the Reports of the Committees in charge of the various departments, will show the condition of the Cabinet at the present time:—

<i>Coleoptera</i>	now in the Collection,	8,249 species.	Increase	2,512 species.
<i>Lepidoptera</i>	"	4,350 "	"	216 "
<i>Hymenoptera</i>	"	1,091 "	"	214 "
<i>Diptera</i>	"	563 "	"	132 "
<i>Neuroptera</i>	"	180 "	"	16 "
<i>Orthoptera</i>	"	78 "	"	9 "
<i>Hemiptera</i>	}	662 "	"	27 "
<i>Aptera</i>				

Making a total of 15,151 species, being an increase of 3,126 species during the past year.

2. By *Baron R. Osten Sacken*, to wit:—
 - "Description of some new genera and species of North American Limnobiina."
 - "Contributions to the Natural History of Cynipidæ of the United States and of their galls. Article 4th."
2. By *James H. B. Bland*, to wit:—
 - "Descriptions of new North American Coleoptera."
 - "Compiled descriptions of North American Staphylinidæ."
2. By *Emil Brendel, M. D.*, to wit:—
 - "On some new species of Pselaphidæ."
 - "New species and corrections in the family Pselaphidæ."
1. By *Charles A. Blake*, to wit:—
 - "Description of a new species of Cuban Lepidoptera."
1. By *H. W. Bates*, to wit:—
 - "Notes upon the variation of sexes in *Argynnis Diana*."
1. By *Henry Shimer*, to wit:—
 - "Description of the imago and larvæ of a new species of *Chrysopa*."
1. By *Rev. C. J. S. Bethune*, to wit:—
 - "Descriptions of three new species of Nocturnal Lepidoptera."
1. By *Samuel H. Scudder*, to wit:—
 - "Revision of the hitherto known species of the genus *Chionobas* in North America."
1. By *Brackenridge Clemens, M. D.*, to wit:—
 - "North American Micro-Lepidoptera."
1. By *Benjamin D. Walsh, M. A.*, to wit:—
 - "On Phytophagic Varieties and Phytophagic Species, with remarks on the Unity of Coloration in Insects."
1. By *A. S. Packard, Jr., M. D.*, to wit:—
 - "A revision of the Fossorial Hymenoptera of North America, Family *Cra-bronidæ*."
1. By *Edward Norton*, to wit:—
 - "Catalogue of the described Tenthredinidæ and Uroceridæ of North America."

During the past year, ending November 30, 1865, there have been elected five Resident and sixteen Corresponding members. The Society now numbers fifty-five Resident and one hundred Corresponding members.

The painful duty here devolves upon me to record the death of one who was dear to us, and whose loss is deeply felt. Our late fellow-member, Dr. Thomas B. Wilson, was removed from our midst by death in the early part of the year, and it is only now that we begin to realize the greatness of the loss we have sustained. He, by whose kindness and liberality the Society has been enabled to become what it now is, was suddenly cut down, and we are left to mourn over greatness and modest worth departed and labors incompleted. He had endeared himself to us all, and it will be long ere we see his like again. His was a life worthy of imitation, and although he has been taken from us, yet his example will not be held up in vain. The Society has been

led to greater exertions than it would have made had Dr. Wilson been permitted to remain with us, and there is every reason to believe that ere long this Society will attain that importance in the scientific world which he, while living, desired so ardently to realize.

During the past few months strenuous efforts have been made, with a view towards placing the Society upon a solid and permanent basis. Printed appeals have been circulated far and near, and committees appointed for the purpose of making known more generally the existence of such a Society, and of exhibiting in its behalf the interests of those who are favorably inclined towards the cause of science.

The Society furthermore, desiring to be of practical use to the community, and especially that portion embracing Agriculture, has commenced the publication of a monthly sheet, styled "The Practical Entomologist," for gratuitous distribution, whereby it is thought much valuable information may be disseminated and thousands of dollars saved. The results of these efforts can only be determined in the future.

All of which is respectfully submitted.

J. FRANK KNIGHT,
Recording Secretary.

The Annual Reports of the Corresponding Secretary, Treasurer, and Standing Committees, were read.

The following paper was presented for publication in the Proceedings:—

"Notes on the Bombycidæ of Cuba, by Aug. R. Grote."

And was referred to a Committee.

The Society then proceeded to elect Officers and Standing Committees for the ensuing year, with the following result:—

OFFICERS.

President—Robert Frazer.

Vice-President—William S. Pine.

Corresponding Secretary—E. T. Cresson.

Recording Secretary—J. Frank Knight.

Treasurer—J. W. McAllister.

STANDING COMMITTEES.

On Coleoptera—J. H. B. Bland, Samuel Lewis, M. D., Charles Wilt.

On Lepidoptera—James Ridings, Charles A. Blake, Aug. R. Grote.

On Hymenoptera—E. T. Cresson, J. W. McAllister, Daniel Wiest.

On Diptera—Aug. R. Grote, Charles Wilt, E. T. Cresson.

On Neuroptera and Orthoptera—John Meichel, James Ridings, Wm. S. Pine.

On Hemiptera and Aptera—James H. Ridings, J. Frank Knight, Geo. B. Dixon.

On Library—Charles A. Blake, Samuel Lewis, M. D., J. Frank Knight.

On Publication—E. T. Cresson, Aug. R. Grote, J. W. McAllister.

On Collecting Fund—Samuel Lewis, M. D., Robert Frazer, Prof. J. Ennis.

On Insect Architecture—J. Frank Knight, Jas. H. Ridings, Chas. A. Blake.

A
MEMOIR
OF
THOMAS BELLERBY WILSON, M. D.,
PREPARED IN PURSUANCE OF A RESOLUTION OF
THE ENTOMOLOGICAL SOCIETY
OF
PHILADELPHIA,
BY A COMMITTEE.

PUBLISHED BY
THE ENTOMOLOGICAL SOCIETY,
AT THEIR HALL, 518 SOUTH THIRTEENTH ST.
1865.

**Proceedings of the ENTOMOLOGICAL SOCIETY OF PHILADELPHIA, at a
Special Meeting, March 16, 1865.**

The following Preamble and Resolutions were unanimously adopted :—

Whereas, In the providence of God, we are called upon to mourn the loss of one of our most valued members, therefore

Resolved, That this Society has heard with unfeigned and deep sorrow the loss it has sustained by the death of our late fellow member, Dr. THOMAS B. WILSON, one of the earliest and most devoted members of this Institution.

Resolved, That as from the very commencement of this Society, it has had his firm and unwavering support, by contributing most liberally to its Library and Cabinet, and by large endowments in money; therefore, the members of this Society individually feel that they have lost a warm friend, one whose advice and sympathy were always honestly given for the best interests of the Society; and that through the whole period of its existence, the Society has felt the beneficial influence of his personal worth, and of his sound and discriminating judgment.

Resolved, That the members of this Society deeply sympathise with the relatives and friends of the deceased in the bereavement they have sustained in the death of our lamented friend.

Resolved, That a copy of these Resolutions, signed by the President of this Society, be communicated to the family of the deceased, with our heartfelt condolence.

On motion, it was also further

Resolved, That a Committee of three be appointed to draw up for publication in the "Proceedings" of this Society, a Memoir setting forth, in an appropriate manner, the labors and endowments of Dr. THOMAS B. WILSON in the Entomological Society of Philadelphia.

Committee—Prof. JACOB ENNIS,
JAS. H. B. BLAND,
J. FRANK KNIGHT.

MEMOIR.

When a man has made himself a benefactor of the human family by devoting his life and a large fortune to the promotion of science, gratitude demands that we perpetuate his memory, and uphold his example for the advancement of those sciences for which he lived. Therefore we form this memoir to commemorate the life and character of our late associate THOMAS BELLERBY WILSON. His father was Edward Wilson, and his mother was Elizabeth Bellerby, both born in England, but they came to America previous to 1800, and were married in 1802. They settled in Philadelphia, where their third child, Thomas, was born January 17th, 1807.

As every fact in the life of such a man is invested with a charm and an enduring interest, his schoolboy days should here be mentioned. During the years 1818 and 1819 he attended a Friends' School, on the east side of Fourth street, below Chestnut, taught by Thomas Dugdale, where, among other things, he studied Latin. In 1820 his father made the voyage to England, and he took Thomas along and placed him at a school in Darlington, Durham County, in the north of England. He remained in this school the most of his time during two years—a period sufficiently long, at his age, to receive very many and vivid impressions of the land of his forefathers. These he must have recalled often during the remaining portion of his life, and they doubtless aided in attracting him so frequently across the Atlantic.

He returned to America in the spring of 1822, being then in his sixteenth year. His disposition to engage in practical scientific pursuits now begins to shape the course of his life. Instead of again entering school on his returning to his native city, he became an apprentice to the study and practice of Pharmacy in the establishment of the late Mr. Frederick Brown in Chestnut street, on the north-east corner of Fifth street. Although he was the son of a gentleman of fortune, and had anticipations of an ample pecuniary inheritance, yet we behold him in this unpretending employment sober, industrious, persevering and contented. His happiness was complete, for he had

daily opportunities of gaining a knowledge of the wonders of the physical universe. To a cotemporary observer, or to a narrator of facts in after times, he might be regarded simply as an apprentice in an apothecary store; but in reality, this was a university education for him. Here he could learn the forces which dwell everywhere in the organic world. Every article in the store, every mineral he handled, every common stone in the street, was seen by him to be filled with wonders, and to possess a long history through which it had passed in the inconceivable ages gone by. This was the most decisive period in his life. Chemistry, Natural Philosophy, Minerology and Geology unfolded to him their treasures, and allured him with prospects of an indefinite career of knowledge. He persevered six years in these pursuits not knowing whither they would lead; but it was enough for him to know that he was progressing rapidly in the knowledge of the great creation around him. At the end of that time it was decided that he should give up forever all thoughts of being employed in the peculiar duties of pharmacy, and that he should enter on a more extended sphere of contemplation. Geology at that time, 1828, was awakening a deep interest in America, and he made preparations for his first geological tour. In the autumn of that year, in company with two or three young friends, he set out on an excursion for geological investigations through the coal regions of Pennsylvania. Their mode of travelling was on horseback, and their route lay up the Delaware river to the Lehigh; up the Lehigh and through the coal and mountain regions on its head waters; thence across the dividing watershed to the basin of the Susquehanna; through the Wyoming valley and its adjacent coal fields; then down the Susquehanna to its junction with the West Branch at Northumberland and Sunbury; thence eastwardly again across the dividing watershed to the head branches of the Schuylkill; then through the Schuylkill coal region; and finally down that river to its mouth at Philadelphia. As geology was then a new science in America, this pioneer exploration of these young men was highly creditable. Henceforward the geological history of our globe was never to be absent from the mind of Wilson. He saw its deep significance, and how all the natural sciences, organic and inorganic, must be made tributary in order to understand the long process by which our world has become what it is. He was now to decide what course to adopt with a view of laying still more thoroughly and broadly the foundation of his future scientific course. Accordingly, in the autumn of the same year he entered the University of Pennsylvania as

a medical student, and was fortunate in having the very eminent Dr. Physic as his private preceptor in the medical profession. Already the medical department of the University of Pennsylvania had attained pre-eminence among the institutions of the United States, and his opportunities for acquiring knowledge were of a very high order. He graduated in the spring of 1830, but his thirst for information in the structure of the great world around him, impelled him to enter on a still wider course of study. Europe was then far more advanced than America in the sciences, and he determined to avail himself of whatever advantages he could enjoy beyond the Atlantic. He accordingly embarked, and arrived in Paris ten days before the Revolution of July, 1830. He there listened to the lectures of Cuvier and other Professors who gave the University of Paris its celebrity. He was a frequent visitor to the Jardin des Plantes, and besides his medical studies he paid much attention to Botany, Zoölogy and Geology. The next summer, after his arrival in Europe, he made a tour on foot to form a practical acquaintance with the natural history of that part of the world. He was accompanied by a young friend and fellow-student, Dr. Caspar Pinnock of the vicinity of Philadelphia, and with their knapsacks on their backs and their geological hammers in their hands, they travelled extensively through France and Switzerland. During the period of his residence in Europe he also visited England and Ireland, and attended a course of medical lectures in Dublin. After remaining two years beyond the Atlantic, he returned again to his native city, Philadelphia.

We now behold him fairly furnished by a variety of studies for a life of scientific usefulness. His apprenticeship in pharmacy had yielded its fruits of Chemistry, Natural Philosophy, and Mineralogy. His attendance on the lectures of the Universities in Philadelphia, Paris, and Dublin, are now over, and they have given him grand and glorious views of the Material Universe. His geological tours in America and Europe have made him practically acquainted with the structure of our planet. Henceforth, independently of Schools and Universities, he pursues his way deeply and more deeply in the mysteries of creation.

He was qualified, and had received his diplomas, for the practice of medicine, but, except as a matter of benevolence, his medical practice was neglected for scientific investigation. The Asiatic cholera had raged in Europe while he was there, and he had thoroughly and practically studied its mode of treatment; and as that epidemic reached America in the same season of his own arrival, his services as a physi-

cian were peculiarly valuable. But instead of entering on a medical practice, lucrative to himself, he devoted all his time that summer gratuitously to a hospital for the poor. It was situated in the southeastern part of the city and placed under the care of three physicians, the other two being considerably older than himself. Tradition reports that nearly the entire labor devolved on him. Being the youngest and most active of the three, having had ample experience in cholera practice in Europe, and his colleagues having their own private practice in the city, he was engaged night and day for a large part of the season in the most arduous duties. In the autumn, when the epidemic had abated, it was necessary for him to leave the city for the renovation of his own health and strength, and he retired for a few weeks to Berks county, Pennsylvania, and to Newcastle county, Delaware.

Immediately on his advent in the country the prominent traits of his character were manifest. He is reported to have been engaged from morning to night in practical botany and ornithology. He collected, pressed and dried plants, and arranged them systematically in his herbarium, and with his gun he captured birds, or quietly and laboriously made anatomical preparations, either of their skulls or sternums or entire bony skeletons. He had attended Cuvier's lectures on Comparative Anatomy, and now he was forming a collection of specimens for his own private study, and which afterwards aided to enrich the Museum of the Academy of Natural Sciences in Philadelphia.

The winter of 1832-3 he spent in Philadelphia, and in the spring he removed to New London township, Chester county, Penn., where he resided with his brother Rathmell eight years. He here purchased a farm which he ever after continued to hold. During this time he was busily employed as a naturalist in the study of objects around his own home, or in frequent tours to distant parts of the republic. He kept always a well supplied medicine chest, and prescribed and gave medicines gratuitously to neighbors who applied at his residence; but his general rule was not to make professional visits. Before leaving Europe he had purchased a choice medical library, and an excellent set of surgical instruments; but now resolving to be entirely devoted to science and not a practicing physician, he gave the former to the Medical Society, and the latter to Wills Hospital, in Philadelphia. During his residence in New London tradition reports the surprise of the people in that vicinity when they saw him in his long walks along the brooks and through the fields, groves, and woods, with his botany box on his back, his entomological net in his hands, the handle of his

geological hammer extending from his coat-pocket, and his hat covered all around with beetles, butterflies and other insects which he had pinned thereon. This is the first intimation we have in his history of the beginning of that large Entomological Collection of more than 20,000 specimens, which he recently presented to this Society. The brother with whom he resided at that time, writes to us that Geology was then his favorite study. And this science continued to be his favorite study during his whole life. In February, 1861, he was met for the first time at the Hall of this Society, by a friend who expressed to him his surprise at finding him so deeply engaged in Entomology, as he had thought that Ornithology engaged nearly all his time. Dr. Wilson replied, "I am as much interested in one of these sciences as in the other; but the science above all others in which I am most interested, is Geology." In his walks as a naturalist, therefore, geology received a large share of his attention. These walks were often extended to excursions of several days, sometimes to weeks and even to months. When these journies were long he went on horseback but never in a carriage. Instead of having a well-packed travelling trunk containing the usual conveniences or luxuries for travelling, he took along only one small valise. With this and a good horse he said he could go and explore all the sequestered parts of the country which he could not so well reach with a carriage or with large luggage encumbrances. The washing of his linen, he had found, could be done in any inhabited country, and new stout clothing would last in good condition until his return home; so that but a very few pieces were necessary besides what he had on. It would be deeply interesting were we to have a precise record of these scientific tours, especially when they were extended to far distant parts of the country. But he left no accounts of them, and it is impossible for his family to recall with precision his frequent journeys through a period of thirty-seven years, reckoning from his first tour. We have already mentioned an excursion on horseback through Pennsylvania in 1828, and another on foot through France and Switzerland in 1831. In later years he visited as a naturalist all the interesting localities of the republic, and of the neighboring British Provinces. We know of his tours through Western Virginia, Kentucky, Tennessee, all the States north of the Ohio river, and up the Mississippi as far as the Falls of St. Anthony. Occasionally he travelled in the ordinary manner when he took pleasure in having his nieces accompany him to the more celebrated places. To some of the attractive spots he went more than once, such as the

White Mountains, Lake George, Lake Champlain, Trenton Falls, Niagara Falls, the Natural Bridge in Virginia, and the Mammoth Cave in Kentucky. In the Canadas it is known that he travelled as far as the Saguenay River.

Besides the two voyages across the Atlantic, already described, he afterwards made three visits to Europe. One was undertaken in the spring of 1842, in company with his brother Charles. He then travelled through England, France, Switzerland and Italy, and returned to America only a short time before the death of his father, which event occurred in December, 1843. He went to England again in 1844, accompanied by his brother William, who describes his activity in visiting various mineral localities and points of geological interest in that country. He also at that time made large purchases of mineralogical specimens and of fossil remains. His last voyage across the Atlantic was in 1851, when he attended the great international exhibition in England. He then also visited Belgium, Holland, Germany, and France, staying a month in Paris with his brother William, who for several years made his home in the capital of France.

Previous to these last three voyages to Europe he had changed his residence in America. In the spring of 1841 he removed with his brother Rathmell from New London, Chester Co., Pennsylvania, to near Newark, Delaware. But while he resided both at New London and at Newark, he kept a house or suite of rooms in Philadelphia, which latter city he generally visited for a few days every week, and during some periods, indeed, he spent continuously more time in the city than in the country.

Although Dr. Wilson travelled so frequently and so far, it is very characteristic of him that we know so little of his travels. Indeed, the most of his acquaintances never knew that he travelled at all. He invariably, on all occasions, refrained from speaking of himself, or of what he had done. Probably no one ever fulfilled more strictly than himself the rule, "Let not the left hand know what thy right hand doeth." His favorite motto through life was "*Res non Verba*." He made no record of his journeys, and even his own immediate family can simply state that they were frequent and performed in the most simple and unostentatious manner. His object wherever he went was to observe—to obtain larger and deeper views of the great world in which we live; and beyond this all else was of minor value. But while we are able to give no narratives of his voyages and travels, we can contemplate with the highest admiration the rich fruits which his

far-extended observations yielded. These fruits consist in his strong and deep convictions of the paramount importance of the Natural Sciences. In his favorite Geology he saw the history of the creation of our globe, and the history of its endowment with millions of species of plants and animals. Around this science he saw all the sciences clustering, and each one revealing its own peculiar part in the formation of our planet. With his enlarged views he loved to look back through the inconceivable ages—the millions of years—that are past, and to contemplate the doings of a wise and benevolent Creator. He saw that for the moral and intellectual welfare of the human family, nothing was more important than to be blessed with the grand and elevated views of the proceedings of the Eternal. Therefore he devoted all his talents, all his time, and all his pecuniary income to the promotion of Science. And therefore he was unwearied and unsparing in founding Scientific Institutions, in collecting Scientific Libraries, and objects of Natural History. In these institutions, in these museums, and in these libraries, he had the happiness of beholding many scientific men at work night and day exploring the hidden things of God, and every year—indeed every month—announcing new truths to the world. The number of young men especially who devoted themselves to scientific labors in the institutions founded by him, is remarkable. And through them and through others yet to rise up, his influence will be felt in coming time beyond any definite period we can fix. As far as we can see, speaking deliberately and calmly, his influence will tell upon the destinies of man forever. Such is the exalted attribute of great benevolent sacrifices. “Yield ye yourselves living sacrifices to God” is an ancient precept; and Thomas Bellerby Wilson, devoting himself with his whole heart, is a beautiful modern example. Beautiful because of his modesty, his unostentatious quietness, and his constant, daily devotion to the work of benevolence, apparently insensible that he was so devoted.

The principal institutions established by Dr. Wilson were the Academy of Natural Sciences, and the Entomological Society of Philadelphia. The former of these was founded in 1812 by a few men of very moderate means, but with a high appreciation of the value of scientific truth. But it owes its building, its scientific library, and its magnificent collection of objects of Natural History chiefly to two individuals, William Maclure and Thomas B. Wilson. It is noteworthy how many points of resemblance there were between these two characters. Both made geology their favorite study; both travelled ex-

tensively on both sides of the Atlantic; both devoted all their time and large pecuniary fortunes to the welfare of the human family; both made the advancement of science the chief subject of their conversation, and the constant employment of their thoughts; and both lived unmarried lives.

Chiefly under the auspices of Maclure the Academy in 1817 commenced a publication of its new discoveries, called the *Journal*. It was in octavo form and its continuation in later years has been called the *Proceedings*. A considerable portion of the first volume was printed in an apartment in his own house, and with types and a printing press furnished by himself. Chiefly through the influence of Dr. Wilson the Academy commenced, in 1847, in addition to the *Proceedings*, another publication also called the *Journal*, but in folio size, and in handsome form. This has been regularly sustained.

Maclure, at different periods before his death in 1839, presented to the Library of the Academy 5,232 volumes. About a thousand of these were folios and quartos, many being very rare and costly. "The value of these acquisitions was greatly enhanced by the fact that they were possessed by no other institution on this side of the Atlantic." At that date the entire number of volumes in the library was less than 7,000. The whole number of donations to the library by Dr. Wilson, as recorded on the library books, is more than 12,000. But as some of these are pamphlets, or rather separate series, deliveries of the same volume, the number of entire volumes when bound may be about 11,000. The donations to the same library by his brother Edward Wilson have been 3,662. The number of volumes in the Library is about 25,000, showing that it is chiefly the gift of Maclure and the brothers Wilson. But the number of volumes gives only a faint idea of the value of the gift; generally the volumes are rare, richly ornamented with plates and very costly.

Maclure in 1837 and 1838 gave \$20,000 for the erection of the present building of the Academy, which was completed early in 1840. He had previously contributed at a single donation \$5,000 for liquidating a debt on the old building first occupied by the Academy in 1826, on the south-east corner of Sansom and Twelfth streets. One of the motives which led him to the erection of a new building was that the very valuable collection of books presented by him, might be preserved in a fire-proof edifice. Actuated by a similar motive, the necessity of space to hold his own vast donations to the Museum and Library, Dr. Wilson enlarged the building to more than double its for-

mer size, and doubtless he would have made it still larger had the grounds been more extensive. The first enlargement was in 1847, when the house was extended 30 feet westward, and the second was in 1853, when the entire structure so extended was elevated 24 feet. His expenditures in these improvements we do not fully know; one of his donations was \$10,000 for the payment of a mortgage, another was \$7,000 for building the glass cases and which now first becomes known and only by accident, another was \$3,700 on a subscription list to which ninety other gentlemen contributed \$8,525, among whom was his brother W. S. Wilson who gave \$500. Dr. Wilson's gifts for building the Academy must have been quite equal to Maclure's, namely \$25,000, and how much more we do not know.

While the building and the library are mainly the donations of Maclure and the brothers Wilson, the fact stands out still more prominently that the Museum of the Academy is mainly the donation of Dr. Wilson, considerably assisted by his brother Edward Wilson. This is illustrated, for instance, by the ornithological department. His collections of birds had long been deposited in the Museum for the use of the members, but the formal presentation did not take place until March 20th, 1860. This was done through a letter written by himself to the Academy. The remarks on that occasion by Mr. John Cassin, the eminent ornithologist, show the extent of the collections, and in what various ways they were made. The remarks were as follows: "This donation by Dr. Wilson has been accumulated from various sources, since 1845, with great judgement, and with constant and unremitting exertions on his part and also on the part of his brother, Mr. Edward Wilson, long resident in Europe. The latter named gentleman has most ably and successfully seconded his brother in the greatest enterprises ever entered upon in America, having for their object the promotion of the Zoölogical Sciences, and general Natural History. The results mainly have been, at this period, the formation of the library of this Academy and its collections in all departments, but especially in Minerology, Palæontology, Conchology, Crustacea, Ichthyology, and Ornithology.

"The very extensive and comprehensive series now presented, with the comparatively small collection previously owned by the Academy, comprise one of the most complete Ornithological Museums extant. It is, in fact, one of the four great collection of birds in the world, and, so far as can be ascertained from published catalogues, is fairly entitled to be considered as presenting facilities for study in this favorite branch of Natural History, equal to those of any other Institution.

"Mainly, the collection of Dr. Wilson was based on that of General Massena, Duke of Rivoli, and his son, M. Victor Massena, Prince D'Essling, which was regarded as the finest private collection in Europe. This was acquired by purchase in 1846, and brought to this country. Various other valuable and more or less extensive collections have been added since that period, including Mr. Gould's Australian birds, which are the types of his great work, "The Birds of Australia," and embracing all the species then known, except five only. Another important collection, mainly Parrots, Humming Birds, and Tanagers, was that of M. Bourcier, a distinguished French Ornithologist, and quite equally so was a collection made in the interior countries of India, by Capt. Boys, of the East India Company's service. Very important, too, are the collections from the Leyden Museum, through the influence of the eminent Naturalists now or lately attached to that Institution, particularly the celebrated Temminck, and many others obtained in Europe through the faithful and judicious exertions of Mr. Edward Wilson for the interests of this Academy.

"Numerous other smaller additions have been made, whenever opportunity presented in this country, by Dr. Wilson, and also have been derived from European Naturalists by exchange and purchase, to the extent of several thousand specimens. Messrs. Verreaux, the well-known commercial naturalists and ornithologists of Paris, have been of exceeding service, and but little less so has been Mr. John G. Bell, of New York, the principal commercial naturalist in this country, whose high interest in the prosperity of the Academy and scientific knowledge, has never failed to be exerted and always has been of great value to the extension of the Collection. Mr. John Krider, Mr. Wm. S. Wood and James Taylor, of this city, have also furnished to Dr. Wilson many valuable specimens, and all of these gentlemen have invariably shown the utmost cheerfulness and liberality in their business with the Museum of the Academy.

"The collection of Dr. Wilson now presented has been derived from the following sources, and includes specimens nearly as here enumerated :

Rivoli Collection, first purchase.....	12,000	specimens.
" " second purchase.....	2,500	"
Mr. Gould's Australian Collection.....	2,000	"
M. Bourcier's Collection.....	1,000	"
Capt. Boy's Collection.....	1,000	"
Mr. Edward Wilson's Collection in Europe, including collec- tions from the Leyden and British Museums.....	4,500	"
Dr. Thomas B. Wilson's Collections in Europe.....	1,000	"
" " " in United States.....	1,500	"

Total now presented to the Academy.....26,000 specimens.

"It may be of interest to add, that the collection previously owned by the Academy comprises about 3,000 specimens, including a very superior North American series derived from nearly all ornithologists in the United States, who have invariably shown the greatest interest in the formation of the large collection of this Academy. The aggregate number of specimens *exhibited* and now belonging to the Academy is therefore about 29,000 birds." Besides this number, Dr. Wilson at that time presented 2,000 unmounted skins, and since then the acquisitions from all sources have amounted to about 1,000 mounted specimens, making the sum of about 32,000 in the Academy's Museum.

This more than royal gift Dr. Wilson presented in a letter as modest and unpretending as though it had been a gratuity of about five dollars. The letter is as follows:

Philadelphia, March 20, 1860.

DEAR DOCTOR—I enclose you a memorandum by which you will please present to the Academy my entire collection of birds now in the Academy. In addition to the 25,000 mounted specimens there are about 3,000 mounted specimens in the cases, which are the property of the Academy; the entire number in the cases being about 28,000 specimens.

The donation does not include the specimens collected by Mr. Duchailu in his *last* excursion to Africa, as these will have to be presented jointly by the subscribers to the fund. When the difficulty with Mr. Duchailu is settled, and the other subscribers are ready to make the donation, you are authorized to include my name in the list of donors, without any further notice.

As I have been twice poisoned with arsenic during the past winter, I have concluded to give up all branches of Natural History which expose me to its influence. I shall not again open the cases of birds at the Academy, and shall be glad if you can find some member to take my place on the Ornithological committee; if you can, you are authorized to offer my resignation from the committee to the Academy. Yours, respectfully,

THOMAS B. WILSON.

To DR. LEIDY, Curator of A. N. S.

P. S.—Having no further use for the keys, I enclose them; the larger one belongs to the cases of mounted birds, the smaller one to the duplicate cases in the lower room and to the oological cases in the Entomological room.

T. B. W.

To convey so great a gift in a letter so simple and short is sublime. The style is in keeping with the character of the man, artless, sincere and open. There is something solemn in his delivery of the keys and his announcement "I shall never again open the cases at the Academy." He had spent many happy hours in contemplating and arranging those feathered forms. For fourteen years he had been gathering them from every quarter of the land and of the sea. They formed now one of the four great collections in the world. He must have long looked upon them with gratification, and now he bids them adieu.

He goes to another labor, another field of usefulness equally wide, another source of happiness equally as elevating. And he was not disappointed. It must ever be to us all a matter of thankfulness that he lived to behold another rich collection of his own making around him here in the Entomological Society.

After the reading of Dr. Wilson's letter accompanying this magnificent donation an interesting debate occurred. A member arose and offered a resolution that a committee be appointed to draft resolutions expressive of the views and feelings of the Academy in relation to Dr. Wilson's great ornithological gift. This was at once opposed by several members who represented how exceedingly painful any such resolutions would be to Dr. Wilson. One of them related an occurrence which took place several years ago when Dr. Wilson had happened to become acquainted with some similar design which the Academy then had in contemplation. He went immediately to one of the prominent members and, with deep emotional earnestness, said he hoped they would immediately stop any such proceedings, for if they did not he would be compelled to stop his donations. To have public resolutions of thanks passed in his favor was too much for his peculiarly modest and retiring disposition. Of course the proceedings were at once quashed, and in like manner the resolution on the donation of the birds was withdrawn.

No attempt can here be made to describe fully the other gifts of Dr. Wilson to the Museum. That would require a large volume. The department of Conchology numbers more than 13,000 species, and more than five times that number of specimens. It is the largest cabinet of shells in America, and to this his contributions were on his usual liberal scale. The crustaceans form a most striking display, and as we view them we are disposed to ask how they could be collected from all around the globe. The radiata, consisting of echinoderms and corals, in all the strangeness of these low forms of life, present a vast and instructive field of study. The fishes and the reptiles amaze the beholder by the multiplicity of their shapes, their adaptations to all imaginable conditions, and the astonishing number of their species. But the department enriched by Dr. Wilson preeminently next to Ornithology, is that of Geology, consisting of rare, beautiful and costly minerals, and the fossil remains of plants and animals. Every visitor to the Museum is astonished by the perfectly preserved specimens of ichtheosauri and plesiosauri. Millions of years have rolled away since they played in the ocean, and here we think we see their bones fresh from a recent

burial. Here is a resurrection exhibiting the inhabitants of our planet as it circulated around the sun millions of years ago, and presented them every twenty-four hours to the warm rays of his light. We seem to be translated to another world, but it is only a translation to the former eras of this world. No wonder that Dr. Wilson said, "The science above all others in which I am most interested, is geology." When we are looking at the remains of these denizens of our planet which enjoyed the blessings of life through the long procession of millions of years, it is then and then only that we can begin to understand what is meant by the words Creation and Creator! Nor can we understand these dead bones until we understand the living. It is only by the study of living beings that we can study and comprehend the dead. Therefore to appreciate these fossil remains, and comprehend the monuments which God has erected in different periods of the past for our instruction, we must have a museum of living things. We must compare them all together; we must study the grand and comprehensive system of organic life; for all living things, whether of the present or of the past, are connected in intimate relationships. Nothing stands alone. And living beings which now seem to stand alone, we see to be connected with the entire family by the discovery of their dead near relations in the rocks, which form connecting links to complete the chain. Not only are we unable to form any just ideas of the words Creation and Creator without the fossil remains of the past, but we are equally unable to form an idea of the creation of living beings without a Museum. It is only when we stand amid Wilson's collection of birds that we can have an idea of creative power and creative wisdom and creative goodness in that single department of creation. And so of the fishes, the reptiles, the constaceans, the plants, the minerals and every other department. Here in this Museum of 50,000 insects, the rich treasure of the Entomological Society, can we only begin to understand the doings of the Eternal One in the work of creating these diminutive creatures. Let no one wonder that Dr. Wilson spent so much money and so much of his life in the establishment of the Academy of the Natural Sciences, and in founding this Entomological Society. The real wonder is that so few men of wealth do the same. How can life, or how can wealth have nobler objects?

Dr. Wilson's labors and pecuniary sacrifices in founding the Entomological Society of Philadelphia, began with its very beginning. On February 14th, 1859, Messrs. James Ridings, George Newman, and Ezra T. Cresson, at the house of the latter gentleman, then in Erie

street, No. 728, proposed among themselves to form an Entomological Society, and to invite to the house on the 22nd of the same month, such of their acquaintances as would likely become members. Fifteen persons attended, namely, Dr. Thomas B. Wilson, T. B. Ashton, Jas. Ridings, George Newman, J. W. McAllister, George Hill, John Pear-sall, Robert Jack, Charles Wilt, Louis Schneider, William Wolter, Henry Feldman, Thomas Cox, J. H. B. Bland, and E. T. Cresson. This may be regarded as the first meeting of the Society, and since then its meetings have been regular. It has been related by one of the members then present, that he scarcely observed an individual who sat rather retired at one side of the room, and who made only one or two short observations during the whole evening. After the meeting was over he was surprised to learn that this quiet individual was Dr. Thomas B. Wilson. This conduct was very characteristic of that remarkable man. He not merely indulged his unostentatious and retiring disposition, but doubtless he listened attentively and studied well the materials which were to compose the new organization. The Society continued to meet bi-monthly, at the private houses of its members until July 13th, on which evening the meeting was held at Druid's Hall, on the south-east corner of Market and Thirteenth streets, and where the meetings were continued about six months. The objects of the meetings were the exhibition of specimens, the improvement of the members in entomological knowledge by conversation, and also the formation of private collections. No library and no museum for the Society were yet resolved on. It was at length determined, chiefly through the influence of Dr. Wilson, to collect a library of books on Entomology, and a museum of insects, and Mr. Charles Wilt, one of the members, very generously offered to the Society, free of charge, a suitable room for their accommodation, and also for the meetings. This room was in his own house, No. 1310 South street, and the first meeting was held there January 9th, 1860. This was an important event for the new Institution, for now it had a permanent seat. Exertions were made to furnish the room, and to procure cabinets for the books and insects. The work of collecting entomological specimens now began. Each member was emulous to contribute as largely as possible to the common stock. Dr. Wilson had not attended the meetings while the Society contemplated no permanent establishment, but now, seeing a permanence secured and suitable resolutions adopted, he entered at once with all his devotion into the labors of the Society, and contributed most liberally towards all its objects. Henceforth there

was no lack of funds, and all was encouragement and activity. Dr. Wilson was one day rallied by a friend that many of his new associates were engaged in mechanical pursuits. "Yes," he replied, "but they are gentlemanly in temper and deportment, and they can collect a great many insects." Soon it was discovered that they had found new insects never yet described. Dr. Wilson's plan was, that they should be suitably described by one of the members, and the paper presented to the Academy of Natural Sciences for publication in their Proceedings in the usual form. This he thought could easily be done, as the author of the paper was a member of both Societies. By adopting this plan the Entomological Society would be saved the expense in its infancy of establishing a periodical of its own, and the Academy would have the credit of introducing the discoveries to the scientific world. But unexpectedly a powerful opposition to the paper was made in the Academy. The committee to which it had been referred could not agree to its publication. An exciting debate ensued; additional members were voted on the committee who were known to be in favor of publishing the paper, and then the matter was decided, and all opposition ceased. But contention and strife were above all things distasteful to the disposition of Dr. Wilson, and he determined at once never again to take this course with another paper, but to establish an independent publication on the part of the Entomological Society for its own new discoveries. These things are mentioned as determinations by Dr. Wilson, because, after the removal to the house of Mr. Wilt, he was the soul of the new Society, and so he continued as long as he lived. He was cautious and judicious in his resolutions, kind and deferential in consulting with the other members, and no one thought of disputing his wishes. This was from no want of manly independence on their part; but he knew how to conciliate and carry along his new associates, and they knew how to confide in his prudence and to appreciate his generosity. As he was doing so much more for the Society than all the members combined, they felt that his opinions and his purposes should have great weight.

As when the Journal of the Academy was begun, the printing of one-half of the first volume was done in Maclure's house, with a press and types furnished by himself, the members setting the types, so now in the Entomological Society a new press with types, paper, and other necessities was purchased and placed in the Society's room in Mr. Wilt's house, where the members were active and zealous in setting the types and working the press. It is hardly necessary to say that the pecuniary outlay was borne mainly by Dr. Wilson. The new peri-

odical, an octavo, was called the *Proceedings*, and the first number of the first volume was finished in May, 1861, Dr. Wilson being Chairman of the Committee of Publication. As a typographical production the *Proceedings* from its commencement has been above the standard of similar periodicals; and of the comparative value of its contents as a contribution to science it becomes us not to speak. The first volume with 381 pages and 3 plates, was finished in February, 1863; the second, with 562 pages and 11 plates, in March, 1864; the third, with 708 pages and 6 plates, in December, 1864; and the fourth, with 506 pages and 3 plates, in June, 1865. We here see a remarkable progression in the time required to complete a volume; the first requiring 24 months, the second 13 months, the third 9 months, and the fourth 6 months. This is explained by the fact that these *Proceedings* are becoming the rallying point of all the Entomologists of America. At first it was designed only for the Society's own papers, composed here in Philadelphia. It soon aroused the attention of entomologists in every part of the United States and the British Provinces; and as this is the only periodical on the continent devoted exclusively to Entomology, they sent their papers from every direction, to be brought out to the world in the same vehicle, and to be associated together in a common brotherhood. They feel very strongly the propriety of associating their labors, and of having the same medium for the mutual exchange of their thoughts. This can evidently be done only in a periodical devoted to Entomology alone, and not in publications which embrace indiscriminately a hundred other different subjects. One of the great benefits of these *Proceedings*, not thought of in the beginning, is, that it arouses the entomologists of the whole continent to exertion, by affording them proper facilities and inducements to make known their discoveries. It is a lever which raises all North America. But it must be supported by funds. Who will step forward in the room of Dr. Wilson, and carry out his designs? Now that the discovery of its importance has been made, shall it die with its founder for want of generosity? We hope not.

In April, 1862, the Society was incorporated by the Legislature of Pennsylvania. On August 11th, 1862, after a hospitable accommodation of two years and a half in the room of Mr. Wilt, the Society removed to its present Hall, No. 518 South Thirteenth street. This is a brick building, two stories high, the lower used for printing and other offices, and the upper for the Library, the Museum, and the meetings. It was built for the Society's use by one of its members,

Mr. James Ridings, and afforded at a moderate rent. The same gentleman made a successful entomological tour to the Rocky Mountains in the summer of 1864, accompanied by his son Mr. J. H. Ridings, who is also a member. They were encouraged to this important undertaking by Dr. Wilson, who agreed to make purchases of all new or rare species in his collections. The members generally continued active and animated in making collections nearer home, and Dr. Wilson was as liberal as usual, not only in devoting all his time to this Society, but in contributing for the purchase of specimens and for other necessary objects. On another page in one of his own letters, it will be seen how he devised a system of entomological excursions, at an expense of \$450 per annum. On one of these tours two of the members visited together the Western districts of Virginia in 1860, and the same country, together with neighboring portions of Ohio, was explored again the present summer, 1865, by one of their number. As the Proceedings were sold at a low price to accommodate and encourage entomologists who, like other scientific men are often poor, the expenses far exceeded the income, and Dr. Wilson contributed altogether about \$2,000 for its support. For insect cases and other like accommodations, he gave about \$2,000. He presented a library of choice, rare, and expensive books on Entomology, numbering about 1,500 volumes, and this must have cost at least \$6,000. The number of insect specimens in the Museum amounts to over 50,000, and for these also the Society is chiefly indebted to him. In addition to all these, he paid the salary of an intelligent and active entomologist, who for several years devoted all his time to the Society, amounting to \$4,000 more. The work of this gentleman has been the describing of several hundred new species and genera, the arranging of the Museum, the editing of the Proceedings, and the correspondence of the Society.

The members were profoundly impressed with their obligations to him, not only for his donations and the bestowal of his time to this Society, but for the kindness and agreeableness of all his intercourse with them personally. To give an expression to these feelings of admiration and gratitude, the more active ones had beautifully engrossed and richly framed a Preamble and Resolutions. It was a gem of workmanship in the highest style of art, containing on the border appropriate legends. When this work was finished a meeting of the Society was held, the Preamble and Resolutions were passed, and a committee was appointed to wait on Dr. Wilson and present the testimonial. Thus the whole was done without his becoming aware of what was going on.

When the committee appeared in his rooms in Philadelphia, he was taken completely by surprise. Had he known their intentions before hand, he would probably have objected effectually to their fulfilment. But now, on a sudden, stood before him his grateful and admiring friends; there was their beautiful thank-offering, and he could not but accept it with all the heartiness and deep emotion of which the nature of man is susceptible. It is known that he always cherished this gift as a sincere and valuable token of friendship. One of the members slightly engaged in these transactions, and who had witnessed what took place in the Academy of Natural Sciences on the presentation of his great ornithological gift, was naturally somewhat apprehensive about the reception he might afford the committee on this occasion. A few days after he had an occasion in the evening to visit him at his rooms, and after conversing awhile, the Doctor took a lamp and asked him to step to the side of the room, when, holding up the light by the side of the testimonial on the wall, he spoke of it, with unalloyed gratification beaming in his countenance and giving tone to his voice. This was not vanity for being praised; it was thankfulness for being beloved. He made known the testimonial to the member then before him, because he was supposed to be unacquainted with the affair, as he seldom attended the meetings and was not what is called an active member. A member of the Publication Committee was asked why the Resolutions had not been printed in the Proceedings. He replied, Dr. Wilson was chairman of that committee and would not allow it. Taken from their golden surroundings and printed in plain letters, they lose much of their impressiveness, still they should be inserted here. They are as follows :

THANKS OF THE
ENTOMOLOGICAL SOCIETY OF PHILADELPHIA,
TO
Dr. THOMAS B. WILSON.

At a Stated Meeting of the **Entomological Society of Philadelphia**, held Monday evening, November the 9th, Anno Domini One thousand eight hundred and sixty-three, on motion of Mr. Charles A. Blake, a Committee was appointed, consisting of Messrs. Charles A. Blake, J. Frank Knight and Robert Frazer, who reported the following Preamble and Resolutions, which were unanimously adopted :

WHEREAS, The Entomological Society of Philadelphia is under lasting obligations to Dr. THOMAS B. WILSON, for his successful efforts in advancing the cause of Science, and by his kindness and liberality enabling said Society to reach its present position, therefore

Resolved, In acknowledgement of his valuable services, the thanks of this Society be respectfully tendered to Dr. THOMAS B. WILSON for his earnest and indefatigable exertions in securing to the Society its many facilities for promoting the Science of Entomology, and our high appreciation of him as an upright and honorable man, and as a useful and valuable citizen.

Resolved, That a copy of the foregoing Preamble and Resolution be suitably engrossed, signed by the Officers, handsomely framed and presented to Dr. THOMAS B. WILSON.

JAS. H. B. BLAND, *President*.

C. F. PARKER, *V. President*.

E. T. CRESSON, *Corresponding Secretary*.

J. FRANK KNIGHT, *Recording Secretary*.

In due time the following letters were received :—

Philadelphia, Dec. 29th, 1863.

GENTLEMEN—On Tuesday evening the 15th inst. I had the pleasure of receiving from you a very unexpected visit, bringing with you a very beautifully engrossed and framed copy of certain Resolutions in reference to myself, passed by "The Entomological Society of Philadelphia," at its Stated Meeting, Nov. 9, 1863.

I beg you will convey to the Society my thanks for the unmerited and unexpected honor it has conferred upon me—and accept also for yourselves my thanks for your kindness and courtesy on the occasion of the presentation.

Yours, respectfully,

THOMAS B. WILSON.

To Messrs. Charles A. Blake,

J. Frank Knight,

Robert Frazer,

Committee of Ent. Soc. of Philadelphia.

Philadelphia, December 29, 1863.

DEAR SIR—The trains on the railroad to Delaware are at present in such a confused condition, that I am somewhat apprehensive something may occur to prevent me from carrying out my intended donation of \$5,000 to the Entomological Society at its next meeting. I cannot transfer the Schuylkill Navigation Loan before next week, and cannot well have a Ground Rent Deed drawn out and properly examined by my lawyer in time for the next meeting of the Society; under these circumstances, I have concluded to make the donation *certain* while I am in town this week, by handing over to you 10 First Mortgage Bonds of the Philadelphia and Reading R. R. Co. of \$500 each, which you will please present in my name to the Entomological Society of Philadelphia, at its next meeting. I have cut off the coupons for January, 1864, so that the first Interest to be received by the Society will be July 1, 1864. Should the Society prefer afterwards to exchange these Bonds for the Schuylkill Navigation Loan or for the irredeemable Ground Rent, I shall be quite willing to do so, my object at present being simply to *secure* the donation in some form to the Society.

Yours, respectfully,

THOMAS B. WILSON.

To JAS. W. McALLISTER, Esq.,

Treasurer of Entomological Soc. of Philad.

Philadelphia, January 3, 1865.

DEAR SIR—I propose to present to the Entomological Society of Philadelphia One Hundred Shares of the Capital Stock of the Pennsylvania Railroad Company, on condition, that they shall be held in Trust by the Society as a Publication Fund, and that the income derived from the same shall be exclusively applied to the publication of the authorized periodical Publication of the Society, which may be issued in octavo form. Should the Society at any time think it advisable to change the Investment, all monies received from the sale of the same are to be re-invested and held in Trust for the same purposes and on the same conditions as the original donation.

The season for railroad accidents and derangements having already commenced, I have transferred this morning, 100 Shares of the Pennsylvania R. R. Stock into the name of the Entomological Society, without waiting for the action of the Society, hoping that it will be willing to accept the donation on the proposed conditions. You will oblige me by laying the above proposition before the Society, at the January meeting.

Yours, respectfully,

THOMAS B. WILSON.

To JAS. W. McALLISTER, Esq.,

Treasurer of Entomological Soc. of Philad.

Philadelphia, January 31, 1865.

DEAR SIR—Since I made the donation to the Entomological Society of Philadelphia, of 100 Shares of the Capital Stock of the Pennsylvania Central Railroad Company, to be held in Trust as a Publication Fund, I have been informed that in case the Society should at any time deem it advisable to change the investment, there are doubts whether the Society would be authorized to re-invest in any other Securities than those authorized by the Laws of Pennsylvania in relation to Trust Funds; in order, therefore, to remove all doubts of my intentions, I will say, that I did not intend to limit the Society to any particular class of Securities in case of re-investment, but intended that when any change of investment was deemed advisable, the Society should be entirely at liberty to re-invest in such Securities as at the time of re-investment might be considered most conducive to the interest of the Fund.

Please attach this to my note making the donation, as explanatory of its meaning.

Yours, respectfully,

THOMAS B. WILSON.

To JAS. W. McALLISTER, Esq.,

Treasurer of Entomological Soc. of Philad.

Of course this gift was accepted with the conditions imposed, and altogether the amount of his donations to the Entomological Society, as nearly as can be ascertained, was about \$26,000. The entire amount which he has from time to time donated to the Academy of Natural Sciences in the form of books, specimens, and money, has been computed by those who know best, to be about \$200,000. To all these must be added his entire time and energies during his whole life. Other men have donated larger sums for benevolent objects, but Dr. Wilson's great merit consists in this, that he appreciated the para-

mount claims of the Natural Sciences, especially at a time when they were much more overlooked than they are now. He was wise enough to see that the Sciences as applied to the practical Arts, are changing the face of the world; and as applied to education, to morals, to religion, and to general intellectual enlightenment, they are giving to mankind their best and noblest ideas. Through these sciences the Great Creator is becoming more glorified than ever by a revelation of the history of his doings through untold millions of years that are gone, and through unnumbered millions of miles far away.

In speaking thus highly of great pecuniary gifts, it is impossible for us to undervalue the many men who are generously devoting their lives to the advancement of the sciences, sometimes in poverty and in want, and who have no large amounts of money to give. A life freely offered is the noblest of sacrifices, and certain to do good forever, either with or without money.

The department of Entomological Science which Dr. Wilson investigated, was the two-winged insects, the *Diptera*. Probably he made this selection because that order is more neglected than the others by American entomologists. He was Chairman of the Committee on *Diptera* in the care of the Museum, and his exertions were truly admirable in collecting, studying, classifying and arranging the frail animals of this order. Apparently there was not a book on *Diptera* in any language which he did not have. After his decease his family presented seventy-one volumes on this order which he had not already donated to the library; and the simple reading of the catalogue of this dipterous literature at the next meeting of the Society was a wonder, showing the vast amount of labor already bestowed by scientific men on this inconspicuous department of creation. He had collected several hundred new species and genera of dipterous insects, and he had made arrangements with Mr. Ezra T. Cresson to describe and introduce them to the scientific world. Death just then ended his career. Shall we lament and say his work was not completed? Indeed, had he lived a hundred years, his work would not have been completed; he would even then have left many unfinished labors, for he had always many things on hand advancing towards maturity; and as fast as some were done, others were undertaken. His collection of newly discovered *Diptera* are in the possession of the Society which he himself founded and reared, and Mr. Cresson, the associate of his labors for several years, is still living and perfectly qualified to describe all his discoveries. A grand question with the Society now is, how can the services of Mr.

Cresson be secured? He would gladly give them gratuitously, but this he is unable to do. For several years past they were secured by a salary from Dr. Wilson, and most certainly others can do what Dr. Wilson did. Who will step forward and fill his place? Dr. Wilson succeeded Maclure in founding permanent institutions, and in making Philadelphia the first scientific city in America; who will succeed Dr. Wilson? The Entomological Society needs an income above what it already has of \$2,500 a year. This is for two objects, to sustain the periodical Proceedings and to keep an individual constantly employed in describing new species, editing the periodicals, conducting the correspondence of the Society, arranging the collections, and generally superintending the Society's affairs. Therefore it has been resolved to attempt the collection of \$40,000, in addition to Dr. Wilson's donations, as a permanent fund for these two objects. It is hoped that men of wealth may be found who will contribute that sum. Surely all Philadelphia can and will do what one man did so many years alone.

The Society has just begun the publication of a new monthly periodical, called *THE PRACTICAL ENTOMOLOGIST*. This is to be self-supporting, and therefore not a burden on the Society's funds. Its object is to procure and to diffuse information in an agreeable popular form on Insects which are destructive or beneficial to vegetation in the United States. This cannot be done by the Proceedings, which is addressed exclusively to the scientific men of the whole world. A large amount of knowledge has already been accumulated on this subject, and the design now is to bring two classes of men, the scientific and the practical, in closer communication. The complaint has often been made that scientific men are not sufficiently practical, and that practical men are not sufficiently scientific. This complaint the Society will aid to remove. It is astonishing what ravages various insect tribes commit every year in the United States. In the State of New York alone it has been said that they destroyed \$15,000,000 worth of wheat in a single year! However this may be, it is certain that that amount of pecuniary loss in a single year is not uncommon in the wheat crop of the whole United States. It is hard to estimate the annual damages to the fruit crops, the peaches, the plums, the apples, the pears, the cherries. In the South we hear of almost fabulous amounts of losses by the boll worm, the army worm, and other insect destroyers in the cotton. To flower and vegetable gardens and to shade trees, the mischiefs from insect enemies are not small. It is believed that general attention will be secured from the community to our new

periodical. Already we are assured of a monthly circulation of from 10,000 to 20,000 copies. We doubt not that entomologists in all parts of the United States will most cheerfully lend their gratuitous aid. It is the happiness of this class of men to contribute their knowledge for the welfare of humanity. We think we have devised a plan to bring out their exertions in a way the community will gladly welcome. The members will do all in their power to extend the usefulness of this Society and to collect, if possible, the moderate permanent fund already named. We believe we can in no better way do honor to the memory of Wilson. This Society is his work, and to this he gave, during the last few years of his life, his almost exclusive devotion.

Dr. Wilson never, to any considerable extent, became an author. His only effort in this way, of which we have heard, is a joint paper between himself and the distinguished ornithologist Mr. John Cassin, Vice President of the Academy of Natural Sciences, and who probably enjoyed more of his intimacy and confidence than any other man, except his own immediate family. That paper was published in the Proceedings of the Academy of Natural Sciences for May, 1863. The learned authors there discuss a subject quite worthy of themselves; the existence of a department of organic life intermediate between plants and animals. The subject is beset with difficulties where precise definitions are to be made, and where clear lines of demarkation are to be drawn between different objects. Nevertheless the subject exists notwithstanding the difficulties; and these difficulties seem to be of our making in our wilful efforts to systematise, in our trying to divide where there are no natural divisions, and trying to separate things which are inseparably joined. The opinions and reasonings of these authors seem perfectly sound, but when they come to make the separation by name between the objects which belong to their own intermediate department, and those which belong to the departments of plants and animals, their troubles begin; for how can they avoid including in their intermediate department objects which are plainly animals on one hand and plainly plants on the other? Probably the conclusion of the Scientific World will ultimately be this: that organic life originally began in our world in organisms which were strictly neither plants nor animals; that variations occurred, as they now daily occur, no offspring being the exact image of a parent; that at length variations extended so far as to become plants on the one hand and animals on the other; that as improved forms of life crowd the older and more imperfect

forms out of existence, so the first and original forms are lost, their gelatinous bodies leaving no fossil remains, and their surviving descendants, which are now nearest themselves, still teach us the inseparable connection between plants and animals. Between plants and animals, in their extremely low forms, no line of distinction has yet been drawn. So conjoined are the two that some organisms have been supposed by high authorities to belong to one at one period of their lives, and to the other at another. Very many are classed as plants by some authors and as animals by others. Great credit is due to the authors of this Paper for their courage in taking up so formidable a topic, and for temperate, clear, and learned discussion.

It is natural to inquire why did not Dr. Wilson become an author? His life was devoted to study, why did he not publish his thoughts? There were several reasons for this. One was his unobtrusive disposition. He was not fond of exhibiting publicly his own views and opinions, especially when he thought they might yet be amended. Another was the fact that his views and opinions were constantly improving and enlarging by his constant and varied studies. There is a wide difference between a man who devotes himself to a speciality, to the study of some one chosen subject, and a man like Dr. Wilson, whose studies embrace all creation. The latter requires many more years for completing his labors and maturing his opinions. In the present day various questions are rising which require a universal study for their solution. For instance, the work of creation—has it been done by a slow process, and by agencies and laws now in operation, or by sudden efforts and by miraculous powers? No narrow studies on any one scientific topic are here of much worth. Geology, minerology, botany, zoölogy, ethnography, astronomy, and the forces and laws revealed by natural philosophy and chemistry, must all contribute their parts to the solution of this grand question. Dr. Wilson's mind was wonderful for the extent of its range. This must be evident from what has already been said about his studies, his travels, and his labors in providing books and museums in every department of research. An impressive instance was revealed soon after his death. It was then discovered that he had just previously been employed in the examination of the old Inca language of Peru, and that he had imported an Inca dictionary and other means for his assistance from Europe. He had not, however, said a word about all this to any one. But it can easily be seen what a bearing this study must have on ethnological questions, such as the origin of races and of man. While his studies were thus

extending, and while his views were enlarging and his opinions were approaching more and more to maturity, it is not strange that he did not publish. He was not yet ready. And it must be remembered that he died early, just entering his fifty-ninth year, and probably like most sanguine persons, he looked forward to many coming years for making known his researches to the world. But it may be that by his death and the publication of his truly heroic and glorious example to the world, more good will be done than he could have done by his pen. We speak deliberately when we say, his example is heroic and glorious. Peace has its heroism and its glory as well as war. The entire devotion of the heart to high and noble purposes, the firm determination, the unbending will, the generous forgetfulness of self in enterprises for the welfare of man, all may be as true and as productive of great results in peace as in the field of battle.

His importation of Inca literature is an illustration of a declaration lately made by an intelligent merchant whose business is the importation of books, and who said that Dr. Wilson annually imported more books than any other man in America. He gave away not only single volumes but entire libraries. We have already referred to the giving of his medical library to the Philadelphia Medical Society; we have spoken of the library of the Academy of Natural Sciences, of the library of the Entomological Society, and we must add, a library to the Historical Society of Philadelphia. Maclure had donated several hundred French volumes, in paper covers, to the Academy of Natural Sciences. They were exceedingly valuable as historical documents, being official journals and reports of the French authorities during the exciting times of the old Revolution. The members of the Academy being devoted to the Natural Sciences, never expected to use those old historic records which occupied valuable spaces on their crowded shelves. It was determined, therefore, to offer them for sale, at the price of \$500, to the Historical Society, which would find them directly in the line of their labors. When this had been done, Dr. Wilson paid the \$500 and presented them to the Historical Society with \$1,000 in addition to have them bound. The Academy has established the \$500 as the Maclure fund, whose annual interest is applied to purchase for their library appropriate volumes, in the front of which Maclure's name is to be inscribed. It was perfectly understood both in the Entomological Society and the Academy of Natural Sciences that no member should be retarded in his investigations for want of books. He had simply to make known to Dr. Wilson his desires and the books

were ordered, however expensive. It was the same with specimens for the Museums. New species for the Entomological Society he immediately purchased whenever offered; and he and the ornithologists of the Academy on his behalf, never neglected the purchase of a new species of bird whenever it could be obtained, apparently regardless of cost.

His own private library, consisting of a few thousand volumes, is a wonder for the wide range of its contents. It is at his late residence in the house of his brother, about half a mile from Newark, Delaware. And as that was his home for so many years, it will be of interest to his admirers to know that the house is a spacious, handsome, country mansion, and surrounded with agreeable lawns and shrubbery. It is situated on a gentle elevation which rises gradually for some distance, and the prospect is fair and far to the East, the North, and the South. Dr. Wilson's rooms were in the north wing, the lower story being parlors, the second his library, and the third his sleeping apartments. The walls of no rooms were ever more completely filled from floor to ceiling with books, and they are in new and very agreeable covers. There is no space left for pictures, except for one of his father in a lower parlor on the first floor. But it is the subjects of the volumes which form the wonder. There are few scientific works, as he depended for these on the Society libraries he himself had formed. Many books which are seen in almost every gentleman's library, are not seen here; but very many works which are rarely heard of, are here seen. It is a refreshment to stroll along the glazed cases and read their titles on their backs. The volumes on the Christian religion are not numerous, but old Quaker works have a good share of room; among them being the autobiography of George Fox. Works on Mahomedanism, Brahmanism, and Budism and other forms of idolatry, met the eye. Voyages and travels in unfrequented parts of the world are numerous. The chief classical French authors previous to the old revolution are there; as he had lived long enough in France to know the language well. Dictionaries and grammars are seen in many languages, not only the well-known ancient and modern tongues, but also the Welsh, the Irish, the Russian, and even the Kaffir of South Africa, and the Inca of South America. Dr. Wilson's friends who knew him best, will have their ideas enlarged of that remarkable man by viewing the choice of his library.

The chief characteristic of Dr. Wilson's intellectual exertions, the wide range of his studies, will be regarded as a defect by many per-

sons. This must happen, because there are two very different classes of scientific laborers, who may be denominated generalists and specialists; and the latter often fail to comprehend the former. The specialists are apt to think there is no pleasure and no profit in Science without knowing things in their individual minutiae. They devote themselves to some one particular branch of science—their speciality—and this they investigate very thoroughly during the whole of their lives. The generalists think that all these special investigations are indispensable, and yet that their own range of studies cannot be too wide or too general. They are deeply impressed with the idea that everything is in some way related to all other things. Nothing exists in an isolated condition, and nothing can be understood if viewed in itself alone. They think these general relations between all objects, are their most interesting and important traits. They love to regard all creation as a unit—a single piece of mechanism in which every individual object fills its own place, and moves in harmony with the general movement, the general plan of creation. This movement and this plan they endeavor to comprehend, and this they regard as of more importance than any speciality. Humboldt in his *Cosmos* may be regarded as an example of a generalist; but even his *Cosmos* must be looked upon as an imperfect and unfinished attempt. Among the ancient Greek generalists was Aristotle, and among the Romans the elder Pliny. In modern times Linneus is a noble example. Copernicus and Newton were noted for their general views and labors. Dr. Wilson's mind was powerfully disposed to generalization; a mental faculty which metaphysicians of the best schools, rank as the very highest of all. From this enlargement of his views it resulted that he was a pioneer of his race, marching far in advance of his generation. He was the first man of wealth in America who understood the importance of having a large scientific library coupled with a large collection of objects of Natural History, like those of the Academy of Natural Sciences. He was the first man of wealth in America who understood the importance of founding an Entomological Society with appropriate means of study. These great institutions were not shaped for show or mere popular gratification, however important this may be, but as seats where learned men might study and make new discoveries, and where young men might be attracted to enter on scientific lives. These means for the advancement of knowledge, were not for one special branch; his disposition was too general for that. If Geology was his favorite study, it was because it includes so much. Here he beheld the formation of our

globe, which is in reality the formation of a star! Here he beheld a momentous history which reaches back through millions of years. It breaks upon the mind like a new revelation! And such, though not miraculous, it must truly be regarded. These great scientific discoveries now rising like the morning sun upon us, are doubtless a part of the plan of God. They have not entered the minds of men by chance. They are given by Him to make known His own benevolent doings, the long series of His own wise and mighty acts. "Come, behold the works of the Lord!" cried the old Hebrew bard. We have greater cause than he to say, "Come, behold the acts of the Most High," as we point to the formations of the rocks, beginning far below the Lower Silurian, and tracing from time to time the growth and progress of vegetable and animal life, with the growth of the solid globe as an appropriate habitation for millions of advancing species, ending in "man whose heaven-erected face the smiles of love adorn"—man recognizing a benevolent First Cause who has "made all nature beauty to the eye and music to the ear." The religious element in Geology is one of its great charms, and this attracted the mind of Wilson.

To the question whether Dr. Wilson was a religious man we must go for an answer to the old and everlasting touchstone, "By their fruits ye shall know them." His whole life was a most eminent example of goodness. His kindness, gentleness, and constant endeavors to please, were always felt. His benevolence was as marked in the innumerable small acts of daily life as in those large exertions which will forever bless the world. He was punctual in all his engagements, strictly upright in all his dealings, and never over-reaching in trying to make a bargain in his own favor. On one occasion, when he inquired of a collector the price of a cabinet of insects which he had determined to buy, and when told the amount it would cost, he remarked, "Only that sum, is it possible?" His spirit and conduct were admirable in all the social relations of life, in his family, among his friends, and in the societies with which he labored. His most striking peculiarity was his modesty and unassuming bearing. So far from looking out for "the chief seats" and for high offices, he carefully avoided them. He tried in every way not to be conspicuous. His father was a member of the Society of Friends, but he himself did not adopt any peculiarities of dress, and probably was never considered a member of that Society. His theoretical religious opinions were mainly those of the Friends, and yet he was one of the chief subscribers in the erection of an Episcopal church edifice at Newark, Del., which he occasionally attended,

but not often, especially in later years. His belief was, that God now gives to man all the aids for spiritual enlightenment that He did in the times of the prophets and the apostles, and that these are full and sufficient. "If ye being evil know how to give good gifts to your children, how much more shall your Heavenly Father give the Holy Spirit to them that ask Him." There is nothing, he said, in the New Testament to favor the idea that this Divine illumination should stop in that generation. But the aid of this Divine Spirit he did not believe came in sensible feelings and agitating emotions. It is an aid we receive in the ordinary exercise of our mental powers, we know not when nor how; and its fruits are to be determined only by their correctness and acknowledged excellence on a calm review. It is a solemn belief for a man to regard himself as standing in the same relation to God and to his fellow-man as did Isaiah and Paul, and that he has equal responsibilities, providing his talents, his means of usefulness, are equal. This is a powerfully operating religious sentiment, and Dr. Wilson's faith was approved and recommended by his works.

It is well known that in memoirs and biographies nothing can portray a man's character so truly and so satisfactorily as his own private letters. We are therefore happy to avail ourselves of some notes which he addressed to a member of the Entomological Society, and they are the more valuable because they are on common every-day matters. It will be seen with what ease and facility he attends to the small details of the Society's affairs, and how he was as careful of minor particulars as of great and momentous concerns. The beginnings and endings of all the notes except one are omitted, as they are all the same.

Philadelphia, November 1, 1859.

DEAR SIR—Nearly a month ago I received your favor of October 3d, and intended to call upon you, but an accident by which one of my knees was sprained a few days afterwards, placed it out of my power to do so.

On my arrival in the city this afternoon I received your note of October 29th. This week I shall be at my rooms this evening and to-morrow (Wednesday) evening, when I shall be glad to see the Committee of the Entomological Society. If not convenient this week, I shall be at my rooms on Wednesday evening of next week *only*, as I dine on Tuesday of next week with the Historical Society at Bethlehem.

Yours, respectfully,

THOMAS B. WILSON.

In the next note it will be seen with what delicate address he leads the Entomological Society out of its old determination not to form or support a Museum of Insects. He did not make the proud sensational announcement that if they acceded to his views, he would give them some tens of thousands of dollars, and devote to the Society several

years of his time, both of which deeds he afterwards really performed, but he began in his usual quiet and insinuating way. He "came down as the dew."

Newark (Del.), November 11, 1859.

I am much obliged for the names of the Coleoptera which you have sent me, and will bring up the other unnamed species next week.

I would rather not address a note to the members of the Entomological Society, as it might have the appearance of wishing to urge my opinions upon the Society, which I certainly do not wish to do. Under the circumstances it is, perhaps, best for me to waive my usual scruples about subscriptions, for if you state to the Society that I have subscribed \$100 towards the formation of a Cabinet, and that I propose also to reserve for the Society's collection any duplicates that I may receive, it will perhaps be more satisfactory evidence that I am favorable to the formation of a collection than anything else that could be said. You have my permission to make this statement if you think it best to do so.

From the conversation I had with the Committee last week, I am satisfied that however difficult it may be to protect a collection both from Insects and Depredators, the Society cannot be independent until it has a collection of its own to refer to.

If you will inform me to whom I shall pay the \$100, I will pay it over at any time.

At the following meeting of the Society a resolution was passed to begin the formation of a Museum of Insects, and consequently the present great and increasing collection dates from that period.

Newark (Del.), February 16, 1860.

I did not receive your note of the 11th inst. until I returned home this afternoon, or I should have replied to it sooner.

Having an aversion to letter-writing, I have kept my correspondence within a very limited range, and in that point of view, should have but little employment for a "Private Secretary;" but in another point of view, as you have a taste for the Natural Sciences, it is quite possible that an arrangement could be made which would be mutually agreeable. I shall not have time to call on you on my arrival in the city on Monday, but if convenient to you, I will endeavor to call upon you on Monday evening next, at 7 o'clock, before you go to the entomological rooms, in order to compare ideas.

Philadelphia, May 16, 1860.

I have received your favor of the 8th inst., as well as the previous ones, but have not replied for a reason mentioned, I believe, before, that is, an antipathy to letter-writing; I always avoid it if I can.

I regret that there should be any doubt or misapprehension in relation to the arrangement which I proposed to make with you:—neither of the cases stated in your note are what I understood myself as making; what I *intended* to propose was, that you should have a salary of \$—— per annum, clear of all expenses. Besides this, I proposed to appropriate for *expenses in making collections*, \$200 per annum for excursions near Philadelphia, and \$250 per annum for distant excursions, *intending*, however, if less than \$200 was required for near excur-

sions, to appropriate the balance to distant excursions, so that the two together should not exceed \$450 per annum. It was *not my intention* to consider either of these appropriations for making collections as part of your salary, but considered both of them to be under my own control, to be used for either purpose, according to circumstances. I must not be understood as meaning that you were to keep a particular account of all the *small items* of expenditure, but merely the *sum total* expended in any excursion, whether near Philadelphia or distant, which can be easily done by putting a particular amount in your pocket and seeing what you have left on your return, without troubling yourself about the *items*.

In regard to the particular manner of meeting the expenses of *near* collections, my view was, to advance to you a certain sum—say \$50—to be used for this purpose, and when it was exhausted, that you would report the fact, and receive such additional sum as might be required.

I have endeavored above to explain my *intentions* at the time I made the arrangement with you, and regret extremely that there should have been any misunderstanding on the subject; if, however, you understand the matter differently, it shall remain according to your understanding until the end of the year.

Mr. Knight has perhaps explained *in part* my views in relation to the publications of the Society, but it is quite impossible to explain them *fully* in a letter. I must therefore defer this subject until I have the pleasure of meeting you.

In the above extract we behold his liberal plan for collecting the insects of our country, appropriating from his own purse \$450 per annum, without taking into account his own personal labors in collecting, which were not small. In addition to this he purchased collections wherever they were found, which could add to the number of species in the Museum. Among them may be mentioned that of Prof. Felipe Poey, of the Island of Cuba, amounting in all to about 2500 species: namely, of Lepidoptera about 600 species; of Hymenoptera about 350; of Coleoptera 1100, &c., &c. The total number of specimens were about 8000. That celebrated naturalist has been forty years in making this collection, and it is supposed to be the best collection of Cuban insects extant. It contained a vast number of new and undescribed species, and the doctor immediately took measures to have them described. Mr. E. T. Cresson, in his work on the Hymenoptera of Cuba, published in the Society's "Proceedings," Vol. IV, pp. 1—200, has described 256 new species of that order. Mr. A. R. Grote, of New York, in his work on the Sphingidæ of Cuba, also published in the "Proceedings," Vol. V, has described 9 new species of that family.

Philadelphia, June 17, 1861.

I have put in the box a few species of Diptera, which are very common at Newark, and of which I have plenty of specimens. Some of the others I think are tolerably common, but as they belong to families which I have not yet studied as to Genera, and in which Osten Sacken declined even to name the Ge-

nera, confessing his inability to do so, I shall be obliged if you will continue to collect any Diptera that fall in your way until I leave you a specimen, saying you have enough of that species. Some of the species you left are not at all common at Newark, and some I have never seen before. I think I shall obtain from them two or three genera not previously in my collection. As to your proposal to make a catalogue of the species of Hymenoptera of North America, as well as a list of the Genera and where found, I think it is one of the desiderata of North American Entomologists, and shall be very glad if you will devote to it any days unsuitable for collecting.

I am glad to hear of the arrangement you have made with Ulke, and hope we shall be able to get along in the Coleoptera.

In a previous note you threw out a proposition about going to California and Oregon next fall, and spending eighteen months or two years in making collections in those regions. In ordinary times I should think it a desirable expedition, but in the present state of financial affairs I can make no engagements for the future. I know already that my income for the present year will be considerably reduced. I see no prospect of any improvement in the time; in fact, it appears to me that they must continue to grow worse under the war policy of the present Administration. I expect, therefore, that before the end of the year my income will be still further reduced. So far, therefore, from wishing to make any further engagements for the future, I think it quite possible that I shall be obliged to terminate my engagement with you at the end of our year, and as my *organ of caution* (as *Phrenologists* say) leads me to trust nothing to the *future* that can be accomplished in the *present*, if you are willing to take it, I will now pay you the \$—— due up to that time, with the understanding that our engagement terminates at that time unless previously renewed. I expect to be in the city again next Monday, after 4 P. M., when I shall be glad to see you, if convenient.

We need not wonder at these discouraging views of the future financial prospects of our country at that date. Not a man in the land could then anticipate the astonishing financial strength which the republic ultimately displayed.

Newark (Del.), November 8, 1861.

For the present I wish you to attend to the interests of the Society *first*, mine *afterwards*. On this point I will have a conversation with you when we meet. I have recently resumed my studies on Classification, and have obtained a few new ideas which may lead to useful results, and therefore prefer to have no changes made in the names of Genera of Coleoptera for the present. I enclose in a small box 17 specimens of Hemiptera for the Society. None of these species, except *one*, are on my list as having been presented to the Society. I had no box to put them in, or I should also have left the 11 species of Coleoptera which you have marked as *not* being in the collection of the Society. I will, however, bring them back from Newark.

My health is about as good as usual, with the exception of a slight hoarseness and thickening of the palate, the remnant of a sore throat. My irregularity in coming to the city for the last two or three weeks was not caused by ill health, but by business which required me to be here on particular days. I hope next week to resume my usual habits.

Newark (Del.), February 14, 1862.

The affair last Monday evening so completely put everything else out of my head that I forgot to have a talk with you about your note. 1st, we *must* furnish the plate for Osten Sacken's next paper, and if he sends a plate for each number of the Proceedings, they *must* also be furnished; no doubt a considerable number of his Extras are sent to Europe, and thus bring the Society to the favorable notice of European Entomologists, which is *very desirable* under present circumstances. I quite agree with you that Mr. ——— ought to have the \$3 for the plate which he has so well executed, and I think also that it would be taxing him more than his fair proportion to expect him to execute all future plates at the same rate, especially if we should have a plate for each number; but, considering the interest he takes in the Society, perhaps he would be willing to do them at three-fourths the usual rate; suppose you have a talk with him on the subject. I am quite willing to put in \$25 for the publication fund, or whatever may be necessary to put the Proceedings through in a proper manner.

In your note you say "The copies (500) of our first plate will, or is expected to be, at the room this evening." I hope you have not forgotten to have twenty-five more struck off for Osten Sacken's extras; if you have, please have them struck off before the figures on the stone are rubbed out.

When you mentioned to me that Mr. Ridings was going to send to England for pins and I gave you the samples, I forgot to give you the money to buy the sovereigns. Please ask Mr. Ridings the cost of what he sent out on my account, and I will pay him next week when I go to the city. This was one of the things that was knocked out of my head last Monday evening.

Philadelphia, May 21, 1862.

I have received the proposed Seal for the Society and enclose you half a dozen impressions which I have taken from it, for the inspection of Members, so that they may adopt it at the next meeting with a knowledge of its character and appearance. You will see that the artist has shown the spurs on the tibiae and even the hairs on the under side of the upper projection from the thorax;—the thorax is more depressed than in the photograph or the insect sent to the artist, but I presume he has done this, in order to give it the air of examining carefully the ground before making a step, so as to make it correspond with the motto, [*Festina lente.*]

Some of the impressions which I enclose are not so good as the others, but they all show that the small press to which the Seal is attached is sufficiently powerful to make a good impression on paper without the aid of wafers.

In conversation with Mr. ———, I mentioned that we proposed to place at the top of our Certificates of Membership a full-sized beetle with its motto, when he made a suggestion which I think will be better; that is, not to do so, but instead of it, to stamp every Certificate with the Seal of the Society: he thought this would give the Certificate a more authentic air than the beetle at the top; from the enclosed specimens you will see that this can very easily be done if we use paper for our Certificates as thick or even thicker than the specimens enclosed, and I do not see any special reason why we should go to the expense of having our Certificates printed on parchment.

I throw out these suggestions for the consideration of yourself and the other members of the Committee, should the Committee think it advisable to propose

to the Society at its next meeting, any special design for a Certificate of Membership. If I recollect rightly, in the revision of the By-Laws, which we proposed last week, no mention was made of the Seal of the Society; I suppose an Article ought to be introduced on this subject.

Newark, (Del.), April 9, 1863.

I have received your note of yesterday, and think that any omission to number our Plates would produce confusion in referring to them, but I have seen somewhere, though I cannot now recollect where, a plan of introducing a second title, somewhat similar to the enclosed pattern.

I am glad that you have mentioned the matter of printing the Proceedings, for I intended last week to have a talk with you on that very subject; it is just as important that the Correspondence, Exchanges, &c. should be promptly attended to, as it is to issue our Proceedings punctually; I do not think that we ought to limit our numbers to any certain number of pages, but that we ought to publish all papers that are regularly reported on by the Committees in their proper order and time; if we postpone any papers, we shall very soon find the authors sending their papers to Societies who will publish them more promptly.

I may be wrong, but my impression is that Mr. ——— comes but once a week to assist in setting up type and in presswork, and that he does it at considerable less than the usual rates; the proposition which I intended to make to you, was something like the following:—That, if Mr. ——— has the time to spare, so that there shall be no delay in the issue of the numbers, an arrangement shall be made with him to set all the type and assist in the press-work at such price as he may be willing to agree to, and I think that if no better can be done, it would be better to give him full prices, for, as he has been on the Publication Committee from the beginning, he will naturally take more pride in preserving its typographical excellence than any other printer would. If Mr. ——— has not the time, then, to make arrangements with some one else, so that you shall be relieved from type-setting, but I think that in any case you should correct the proofs and take a general supervision of the printing. In order to carry out this plan, it will perhaps be necessary to purchase more type, so that type-setting may not be delayed by any delay in the return of proof-sheets from authors. For all these things I am willing to furnish whatever funds may be necessary; in fact, I do not expect Vol. 2 to pay expenses, but as we approached the end of Vol. 1, I saw that the steadily increasing number of pages and the coloring of Plates, made it necessary to change the price of subscription for the 2nd Vol. Our terms for the 2nd Vol. make no promises for the 3rd Vol., and perhaps by the time the 2nd Vol. is completed, *the Public* will not object to an increase of price for the 3rd Vol., while at the same time I hope we shall be able to preserve the old price for our members. I wish you would think over the above and suggest any other plan or ideas that may occur to you.

On the cover of the last No. of the Berlin Entomological Magazine, which I left with you, you will see a notice that the price for *Members* of the Society is \$2 per annum—for the *Public* \$3 per annum.

I intended last week also to have a talk with Mr. ———, about the Insect Case which he is now making, and the four other cases which will be wanted; I shall be obliged if you will see him, and let me know next week his ideas on the following propositions; (I have paid him \$50 in advance on the case now making.)

I propose now to pay him \$50 more, and the balance when the case is finished and at the Hall of the Society. I propose also, (if he thinks it will be better, to secure at once the lumber necessary for the four other cases,) to advance \$50 on each for that purpose, say \$200 altogether, and also to advance on each case an additional \$50, when it is so far completed as to require cork and glass; the balance due on each case when finished, to be paid when it is delivered complete to the Society.

We can easily understand how individuals may have been acquainted with Dr. Wilson, seeing him act and hearing him speak for years, without recognizing him as a great man. Even now they may not feel that a great character has just left us. When greatness comes in its most simple and unpretending form, it may easily be overlooked. So it was of old with "the man of Nazareth." A member once remarked to us at a meeting of the Academy, as he was walking across the room, "The doctor is the very personification of modesty." He would not surely have been great if greatness consisted in making a display, either in speaking or in acting. It is a beautiful lesson taught us by an ancient seer, near three thousand years ago, that he did not recognize God in the thunder, nor in the earthquake, nor in the whirlwind, but in the still small voice. With the great mass of mankind it is just the reverse. They have need to be arrested and made attentive, and taught how the still small voice may tell more than the thunder. In human character greatness of the very highest type consists in an enlightened judgment and a good heart; not in the faculty or the disposition for making personal demonstrations. The demonstration of a great mind shows itself by good and great deeds performed silently and with the least possible ostentation; good and great deeds whose influence may last through all time without any alloy of evil. *Res non verba*, things not words, as we have already said, was his favorite motto. The superiority of his judgment was seen in not allowing his benevolence to run in the ordinary beaten tracks, but in making the Academy of Natural Sciences what it now is. He was very far in advance of the general intelligence of the times when, many years ago, he entertained so high an appreciation of the Natural Sciences. And after the Academy had been well furnished and well established, he again showed his judgment superior to that of members there by founding the Entomological Society. The ruling spirits of the Academy could not see the propriety of having a new society whose object was purely Natural History, like their own, and apparently interfering with their work and opposing their interests. He saw clearly what they could not see, that the Academy never had answered, and probably never would answer, the purposes of entomology. Just as formerly, there

was a necessity for founding the Academy, although the Philosophical Society existed in the same city for the same objects, so now there was a like necessity for founding the Entomological Society, although both these old institutions existed with the same objects in view. He saw that entomology should occupy a higher regard, and receive a more vigorous treatment, than that bestowed by them. He saw that though the insects are small, yet altogether they are great. "The locust, the caterpillar, the canker-worm and the palmer-worm are God's terrible army." He saw that insects are practically as important as any other class of animals, and he saw, that scientifically considered, they are the most important class, because the number of their species is probably four times greater than that of all the other classes together. The beginning of the Entomological Society was most unpromising. As a society it did not even aspire to have a library, or a museum of insects, or a permanent hall of its own. Dr. Wilson showed the greatness of his mind in appreciating the men, in uniting them together more closely, in placing before them soul-stirring objects, and finally in calling out the efforts of the entomologists of the whole country from one end of the United States to the other. For several years he worked with them quietly and unobserved, and the society was almost unknown except among entomologists. There were wise men and great men in the Academy at the time of the formation of the Entomological Society, but none were greater and wiser than he. When, as in the case of George Washington, a man's greatness lies in his judgment, in his wisdom for managing great affairs, he can be appreciated only by a very narrow circle, unless some great emergency call him forth, or unless the powerful promptings of his own benevolent disposition urge him to undertake great things. Then his greatness is measured by the deeds he has done and the way they are done. The way, the manner of Dr. Wilson, could not have been better. His example will be effective for a long time to come. In small things, in the countless details of founding and conducting large societies, his wisdom was as striking as in extensive designs. A single instance of these minor matters can alone be mentioned. An influential member of the Academy proposed to him to have the floors of the rooms in the lower story covered with matting, the bare boards appearing rather unseemly. No, he promptly replied, the gas-burners and the gentleman's cigars and pipes are lighted with matches, and they or the ignited tobacco, falling on the dry matting, might easily burn up this building and all its contents.

His general health was good, and he was capable of a large amount

of intellectual labor. He was industrious during the day, and at night it was his habit to be up until one or two o'clock in the morning, actively engaged in study. His hour for breakfast was at nine. About the seventh of March, 1865, he complained of being feverish, and for a few days he bore his illness as an inconvenience, but not as being serious. He reclined in his easy chairs in his study, and tried to amuse himself with his books, now with one and now with another, but none brought their usual relish. Occasionally he walked out a little, saying he enjoyed the open air. In his study he took his sparing meals, which were brought to him contrary to his usual practice. On Sunday morning, the 12th, he had become so much worse that his brother insisted on his retiring to bed; and as a compromise he consented to have a couch brought in his study. His fever rapidly increased, and in the evening of that day he was affected with delirium. This continued during Monday, but on Tuesday evening he recognized his brother and addressed him by name. Later in the same night, apparently at the crisis of the disease, he suffered a spasmodic convulsion, partly rising up in his bed and showing signs of strong excitement. As this passed away it became evident that he was in extreme danger. His symptoms were now decidedly those of typhus fever. He rapidly declined, and on Wednesday, the 15th, he breathed his last, still in his study and surrounded by his books. He died in the midst of his labors; and even now his old accustomed volumes seem to look down from their shelves to the spot where he loved to sit and study, and where he lay when he reached his end.

His remains were conveyed to the city residence of his brother Rathmell Wilson, Esq., in Philadelphia, where his funeral was attended on Saturday the 18th. Besides his relatives the chief mourners were the scientific gentlemen of that city. Sorrowfully they accompanied him to the cemetery at South Laurel Hill.

His Will had been made some considerable time past, and he therein bequeathed the sum of \$10,000 to the Academy of Natural Sciences. He had expressed his intentions to alter this bequest in favor of the Entomological Society, for the reason that he had already done so much more for the Academy, and that the Academy was so much better provided for than the Society. But he died suddenly, sooner than the anticipations of us all, and no change in his will was made. This explanation in favor of the Entomological Society, seems demanded by the occasion. In the right view of the case, however, all is well. This Society had his kind intentions; Science has for its advancement the

important sum left at his death ; and mankind at large has the benefit of his liberal and large hearted example. His example will continue to be a power in the world, and do for this institution far more, we trust, than even his own best personal acts.

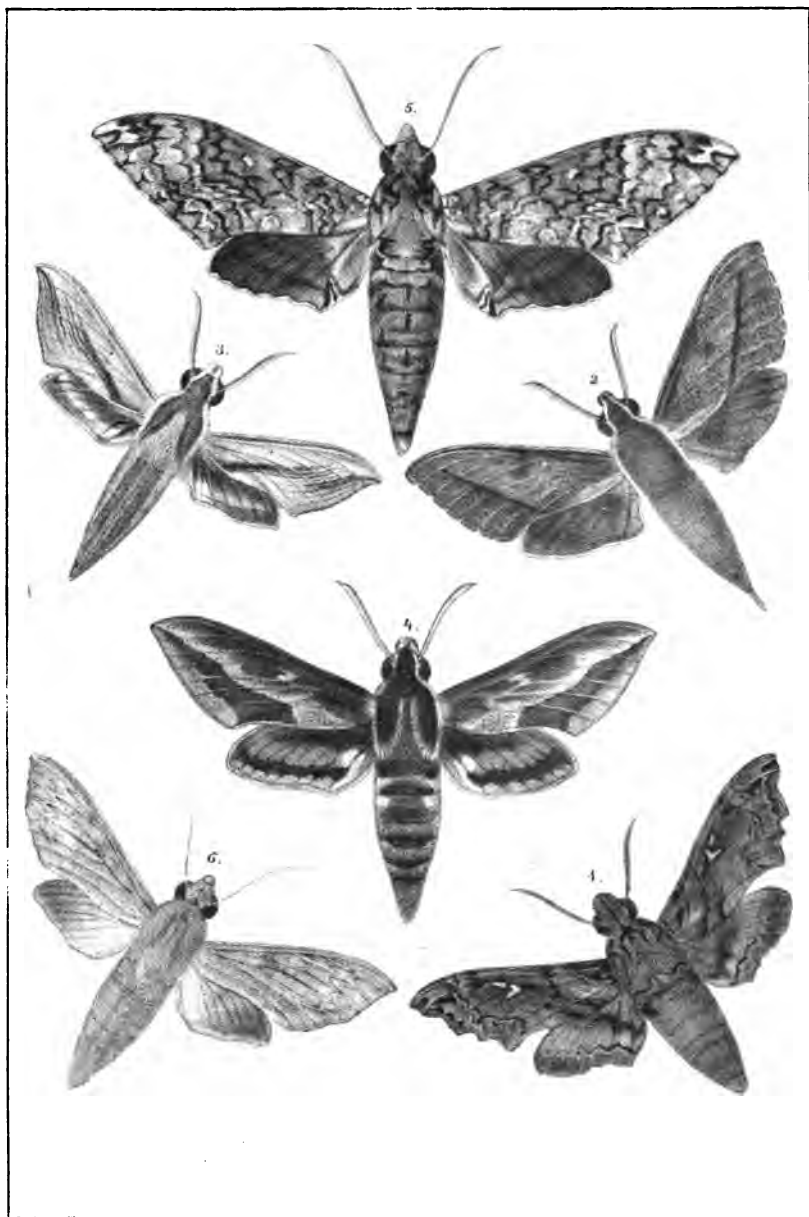
A Monument to Dr. Wilson is already built more durable than granite or marble. As in the solid rocks we behold the impressions of plants and animals which have lived many millions of years ago, and their forms and their characters still stand out in bold relief, so our departed friend has imprinted his image on the moral and intellectual world forever. He has done deeds whose records can never be defaced. He has given an onward movement to the development of scientific knowledge which must go on without end. Every year it will spread wider and wider, as new truths are discovered by the means which he has provided, and as new young minds are attracted to devote themselves to scientific investigations by the libraries and museums which he has established. As in the material world force is found to be indistructible, and an impulse once given can never end, so in the moral and intellectual world, an onward movement for the welfare of humanity must go on forever. Such an impulse he has imparted, and as it rolls on like a mighty wave through all future generations, it will be his living monument admired to the end of time.



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|--|--|
| 1. <i>Agrotis</i> <i>sp.</i> <i>Grate</i> ♂. | 4. <i>Agrotis</i> <i>sp.</i> <i>Grate</i> ♂. |
| 2. <i>Agrotis</i> <i>sp.</i> <i>Grate</i> ♂. | 5. <i>Agrotis</i> <i>sp.</i> <i>Grate</i> ♂. |
| 3. <i>Agrotis</i> <i>sp.</i> <i>Grate</i> ♂. | 6. <i>Agrotis</i> <i>sp.</i> <i>Grate</i> ♂. |

to his country, to his teacher and mankind at large is the best and most noble and noble-hearted example. His example will continue to live in the world, and do for this institution far more we can do for it by his own best personal acts.

His example to Dr. Wilson is already built more durable than any monument. As in the solid rocks we behold the impressions of past generations which have lived many millions of years ago, and whose forms and their characters still stand out in bold relief, so our great friend has imprinted his image on the moral and intellectual world. He has founded schools whose records can never be defaced. He has set on an onward movement to the development of scientific knowledge which must go on without end. Every year it will spread wider and wider as new truths are discovered by the means which he has given. And as new young minds are attracted and wedded themselves to his noble investigations by the libraries and museums which he has established. As in the material world force is found to be indestructible and an impulse once given can never end, so in the moral and intellectual world, an onward movement for the welfare of humanity must go on forever. Such an impulse he has imparted, and as it rolls on like a mighty wave through all future generations it will be his living monument adored to the end of time.



1. *Hemeroplanes pseudothyreus*, Grote.
2. *Chærocampa irrorata*, Grote ♂.
3. *Chærocampa Robinsonii*, Grote ♂.
4. *Dellephila Calverleyi*, Grote ♂.
5. *Sphinx Brontes*, Drury ♂.
6. *Erinnyis pallida*, Grote ♀.



1. *Erinnyis umosa*, *Grate* ♂.
2. *Erinnyis Mexicana*, *Grate* ♀.

3. *Erinnyis Enotrus*, *Cramer*, sp. ♀.
4. *Erinnyis melancholica*, *Grate* ♂.

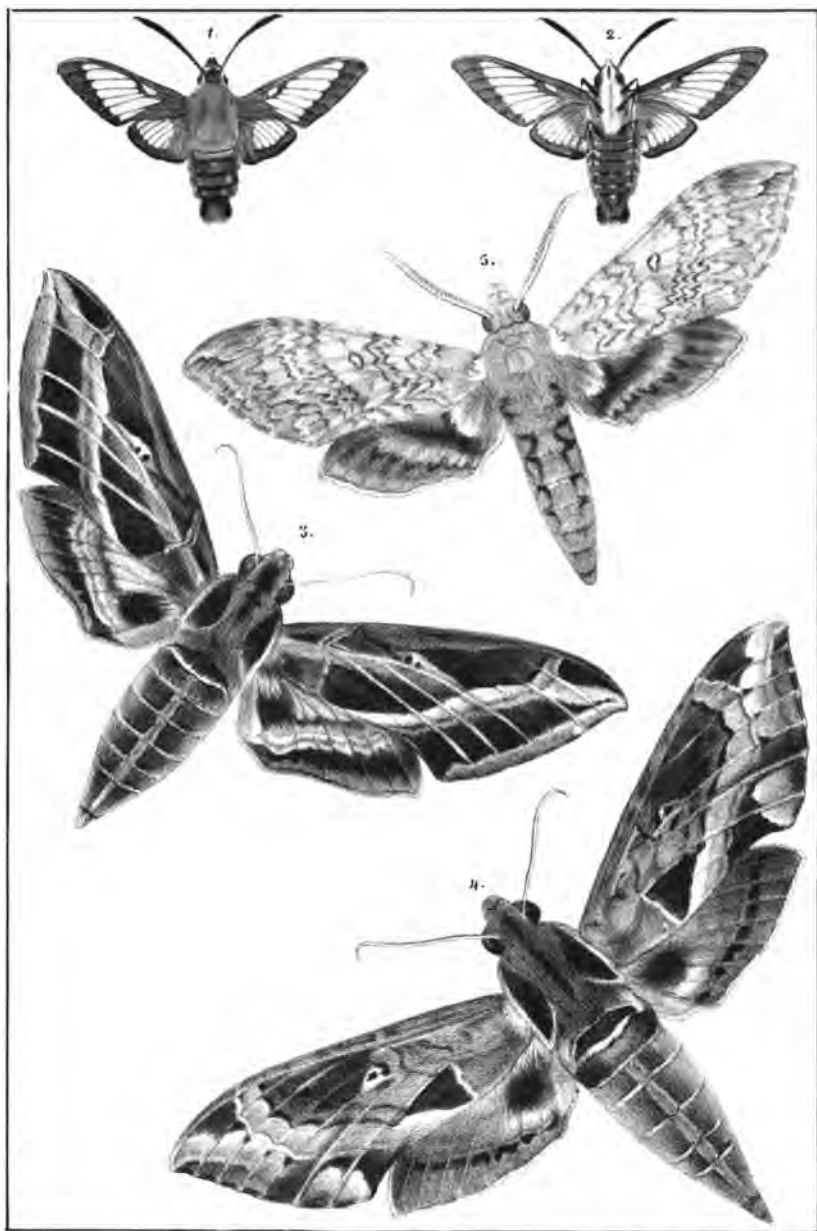


1. *Erinnyis rimosa*, *Grote* ♂.
2. *Erinnyis Merianæ*, *Grote* ♀.

3. *Erinnyis Enotrus*, *Cramer*, sp. ♀.
4. *Erinnyis melancholica*, *Grote* ♂.



1. *Hemorrhagia gracilis*, G. & R. ♂. 2. *Philampelis lionel*, ♀ & ♂.
 3. *Hemorrhagia gracilis*, reversa. 4. *Philampelis lionel*, female.
 5. *Syngia affinis*, G. & R. ♂.



1. *Hæmorrhagia gracilis*, G. & R. ♂. 3. *Philampelus Linnei*, G. & R. ♀.
 2. *Hæmorrhagia gracilis*, reverse. 4. *Philampelus lycaon*, Cramer sp. ♀.
 5. *Sysigia afflicta*, G. & R. ♂.



1. *Cytorus latus*, Grote, ♂.

2. *Crocota heros*, Grote, ♀.

3. *Koblesonia formosa*, Grote, ♂.

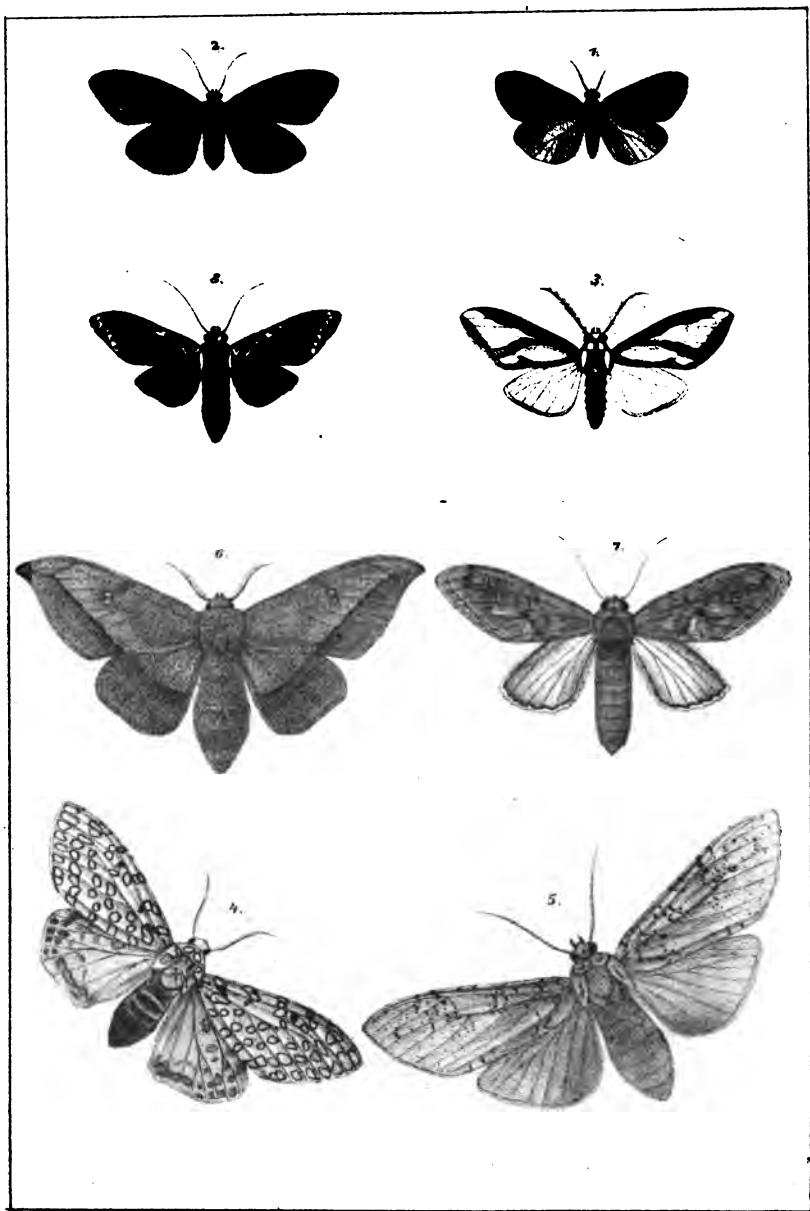
4. *Eupantheria albicoarctata*, Grote, ♀.

5. *Eubania* sp.

6. *Perisoreia* sp.

7. *Platylabus* sp.

8. *Carex* sp.



1. *Cytorus latus*, Grote, ♂.

2. *Crocota heros*, Grote, ♀.

3. *Robinsonia formula*, Grote, ♂.

4. *Eopantheria albicornis*, Grote, ♀.

5. *Euhalisidota luxa*, Grote, ♀.

6. *Perophora Packardii*, Grote, ♀.

7. *Heterocampa cubana*, Grote, ♀.

8. *Carathis gortynoides*, Grote, ♂.

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Date Due

MAR 26 1963

